The Builder.

VOL. XXIV.—No. 1243.

A Quarter of a Century of London Street-Improvement.

PROGRESS in any art or science, or work of improvement, in order that it be continuous and increasing,—that is that it be the reality,—requires that there should be, from time to time, a posting-up of results accrued in some number of years ending with the date of the retrospect. Without the periodic review and record, what has been done is apt to be lost sight of; and the particular items of work once performed are left to be again elaborated, and the old lessons again got by heart. Not less important for the future may be a review that chiefly demonstrates how small is the progress in one case made, and how large must be the measures of advance in order to re-establish equality with the progress on other and parallel lines.

The time at which we are arrived happens to be well suited for an instructive review of what has been done, in a period of years, in the work of London street-improvement, and for a renewed statement of the work still left to be done. Just five-and-twenty years ago, the Metropolitan Improvements, after having been the subject of several inquiries by committees of the House of Commons, in different years, had received the important but still inadequate contribution to their accomplishment, of an "Act to enable her Majesty's Commissioners of Woods, Forests, Land Revenues, Works, and Buildings, to make additional thoroughfares in the Metropolis;" and the commencement of the routes referred to, was made in the line which is now New Oxford-street. The Act itself (3 & 4 Vict., cap. 87) bears date August 7th, 1840. It was followed in 1841 (May 10th,—4 Vict. cap. 12) by an Act "to enable her Majesty's Commissioners of Woods to make a new street from Coventry-street, Piccadilly, to Long-acre, and for other improvements in the metropolis;" by one (4 & 5 Vict., cap. 40; June 21) "to empower the Commissioners of her Majesty's Woods to raise money for certain improvements in the metropolis, on the security of the land-revenues of the Crown;" by one (4 & 5 Vict., cap. 25; same date) "to empower the Dean and Chapter of Westminster to grant building-leases in certain parts of the City of Westminster, and for other purposes;" and by an Act (4 & 5 Vict., cap. 27, likewise dated June 21) "to enable her Majesty's Commissioners of Woods to complete the contract for the sale of York House, and to purchase certain Lands for a Royal Park." Reports of Committees, on which the bills in the House of Commons were based, had appeared in 1836, 1838, 1839, 1840, and 1841. In 1840, besides the report of the Committee on "Metropolitan Improvements," there was one of a Committee on the Thames Embankment.

It does not appear, however, that at any time there was a general plan of London, showing projected improvements throughout the metropolis,—such a comprehensive plan, or design, as has been the basis for all the great works that have been achieved in Paris during the last few years,—less than the half of the period we are considering; and there is none now, that we are aware of, which can be considered as presenting what the Metropolitan Board of Works would undertake, if provided with funds; although the want of such a plan showing lines of railway projected, as well as other routes, to the suburbs, is felt and proclaimed at the commencement of every Session of Parliament. The most comprehensive plan contributing to the decisions arrived at five-and-twenty years ago, was one by Mr. Pennethorne, which took cognizance of the portion of London lying between Oxford-street, Bloomsbury, and Clerkenwell, on the north, and Lincoln's-inn-fields, Covent Garden, and Coventry-street, south, and provided for a new connecting line between eastern and western London. To what extent the plan for western London coincided with the plans of Gwyn, and the later proposals of Mr. Sydney Smirke, we need not here examine. Some resemblance in what deals with the same circumstances as to existing streets and general direction of traffic, is always likely to exist. Such resemblance there is, even, between the actual arrangement of the streets in the City, and the plan of Sir Christopher Wren. But such resemblance does not preclude modifications that may detract seriously from the serviceableness of routes: these modifications are apparent in the case of the City; and we shall see that they were made upon the plan of Mr. Pennethorne, by the House of Commons. Besides his plans for the western part of London, Mr. Pennethorne made others, for the eastern part, since carried into effect, more or less exactly; and which may be regarded as part of the connecting line already alluded to. As regards western London, Mr. Pennethorne's lines were adopted in 1840 or 1841, and were soon afterwards carried into effect, but with the omissions and modifications referred to, which now seriously impair the efficiency of the routes: we should only need to allude to the tortuous course of the route from Wellington-street to Bloomsbury-street; but we should observe that the line which is now Garrick-street has only lately been completed; that the continuation of Great Queen-street into Holborn, across Gate-street, seems far off; and that the direct connexion between Hart-street and Theobald's-road, forming part of the connecting line, remains to be made, as also the continuation of the line to Old-street.

The difficulty that has prevailed against all idea of a comprehensive design of London street-improvement, and which has delayed and ultimately crippled nearly every isolated work since the time of Nash, has been the pecuniary one. There has been no fund regarded as applicable to the general improvement of London, excepting that derived from the coal-duties, and the small duty on wine; and this fund, being collected by the Corporation, has been usually claimed for the City. Any proposal of distinct rates for London improvements had for many years, or still has, only languid support, or positive opposition, from the metropolitan representatives in Parliament; whilst the representatives of provincial towns, and the country gentlemen generally, have refused to admit any peculiar claim on the part of London, as the capital of the country, to money out of the proceeds of general taxation. Each government has been anxious, before everything, to keep in place and not to offend any number of its political supporters. The only individual chargeable with work connected with the general improvement of London, up to the time of the Metropolis Management Act, 1855, was the Commissioner of Woods and Forests, or First Commissioner of her Majesty's Works; and the holder of that office went out with the Government. Moreover, the office here referred to has never been filled by any one appointed because of his knowledge of any matter connected with architecture and towns-improvement. Sir Wm. Molesworth, for example, was put into the office, he having paid particular attention to the Colonies; and the best that can be said for the system is that the individual just named was not the worst minister that has held the office. In short, no one had power, conjoined with funds, out of the City. The creation of the Metropolitan Board of Works has allowed of the taxation of the metropolitan residents by their own representatives, duly elected; but the bulk of the money raised by rates, has been required for, and absorbed in, one or two works, the chief of these being the sewerage of London. Thus the wants of the metropolis generally, in the matter of street-improvement, have remained unattended to, for a long period of years, except in the provision of new or amended lines which may be counted on the fingers. Parks, indeed, have been provided: thus, following long after Regent's Park, came the park which was provided for by the Act of 1841, namely, the Victoria Park; then came Battersea Park and Primrose Hill; to which have been added the space laid out on the site of Kennington Common,—not to mention the improvements in the older parks: but, probably, the freedom from opposition to the provision of parks, comparatively with the obstructiveness in the matter of the street-improvement, may be attributed to the respect which members of Parliament have for any appanage of the Sovereign. The Royal trusteeship has tended to the advantage of the people: though there can be no reason for leaving the police of the parks in its present state of inefficiency at ordinary times.

Before the Act of 1840 was passed, there was much contention in the Committees of the House of Commons, as to the exact lines of street that should be adopted; and the result was, as we have said, that there were modifications of the original propositions in points, then of great importance, that have become more so,—left as they are still unattended to, or some of them with defects created. The committee that reported in 1838 were induced not to recommend the removal of Middle-row, it having been contended by Mr. Richard Lambert Jones,—a person of great influence in the City, and one who was alive to the chance of diverting money to his quarter of the metropolis,—that the narrowed width caused no obstruction. Mr. Jones proposed that three houses should be removed, to effect the improvement desired. The same witness argued against Mr. Pennethorne's line from Coventry-street to Long-acre, advising a curved connexion with the western end of Great Newport-street; but in the case of this part of the entire design, the original plan was in the main carried out. Again, Mr. Jones sought to make a considerable deduction from the work connected with Hanover-street and Belton-street, or what is now Endell-street; and though he did not entirely succeed, Mr. Pennethorne's plan eventually was altered; so that Endell-street is not in line with Bow-street south, and Bloomsbury-street, or Plumtree-street, as it was called, north; and the resultant defects are barely mitigated by rounded corners to Endell-street and Bloomsbury-street.

The original proposal of Mr. Pennethorne, as regards western London, provided (besides some features of detail, but important features, that we have adverted to,) for a square on the ground where the Baptist and French Protestant Chapels, the south end of George-street, and some of the property on the west side of George-street and

in Broad-street, together now are. A line forming the western side of the square would have been prolonged from Broad-street, opposite Monmouth-street and Great St. Andrew's-street, to where the Bedford Chapel was and is. This chapel was intended to be removed, as it stood exactly in the centre of the intended street connecting Holborn and Oxford-street, which was to be there increased in width by forming the line on the south, for a considerable distance east and west of Bloomsbury-street, somewhat in crescent-form. An intersecting street was planned from St. Giles's Church to Streatham-street, as well as an opening from the new line, to Church-street. One of Mr. Pennethorne's main points was to get the whole of that area of houses known by repute to all London as "the Rookery," cleared away, at least as far back as Church-lane. The line was ultimately made direct from near the end of Southampton-street, on to Tottenham-court-road,—Mr. Pennethorne remonstrating, and showing that the saving would be only 2,000*l.*, whilst that one half the Rookery would be left standing. The Committee thought that the owners of the property would pull down the houses themselves; although Mr. Pennethorne explained that this could hardly be done with satisfactory result, as the houses were let on leases of various lengths, some forty years. The sequel was, after the houses in New Oxford-street were built, a seriously depressed condition of the property in that street, along with a condition of the people in Church-lane such as had till then been unheard of in London, and which had been in some measure produced by the evictions precedent to the improvements. A curious letter in the *Times*, purporting to be written by some of the inhabitants of Church-lane, referring to the state of their dwellings, may perhaps be called to mind. Great exertions were made by the late Mr. Charles Cochrane, and others, to get the district improved; but it remained in a sad state for many years: it is but little different at the present time; and we presume, from appearances, that the rental from the shops in that part of New Oxford-street is permanently diminished. Needless suffering was caused, and cost of the work was not diminished as intended. Certain new streets are now formed between High-street and New Oxford-street, but not we think according to the original plan, more than was the line of New Oxford-street itself.

As regards the line from Bow-street, northward, it was to pass on straight to Castle-street, at the intersection of the latter with what is now Endell-street; whence, after a very slight bend, the line was to be continued to cross Broad-street, as part of the line which includes Gower-street. Eventually not only was the line altered so as to leave the corners merely rounded off, but Belton-street was widened by pulling down houses only on the east side: thus the property on this side remained for many years, of small value, by reason of the unsightly appearance of what was opposite. Mr. Jones seems to have succeeded in establishing with the committee, the curious position that a crooked line, or a line with turns in it, was better than a straight line, for a street; and the committee were very ready to be led by the nose along any trail that had any scent of the *saving* of a few pounds. Mr. Jones said he was convinced, from his "vast observation" in the City of London and elsewhere, that direct crossings were worse for traffic than such as might be in a short diagonal line; and he spoke of a "common observation," as by carmen, that you could get more quickly from Old Jewry to Queen-street, than from King-street to Queen-street, though the two last-named streets were opposite one another, and the distance from the Old Jewry is twice as great as the length of the crossing. A pre-conceived opinion is easily arrived at when premises are manipulated for the occasion, and one-half are shut out. The truth is that there is required at many of the intersections of streets in London, as we have often sought to show, a circus, in each case, such as Nash planned at two places in the length of Regent-street. As regards such a crossing as that from Fleet-street to Ludgate-hill, there should be a bridge, just as in the case of Holborn-hill and Skinner-street. To the bias that the Committee received from Mr. Jones was perhaps due the mutilation of the Piccadilly and Long-acre line, and the indefinite postponement of the eastern extension from Queen-street to Holborn. The space of ground on which is now the house known as the Cremorne Branch Restaurant was left jutting out opposite the eastern end of Coventry-street; Long-acre, at its western end, was not widened as intended; and the two houses in Drury-lane, causing the awkward crossing from Long-acre to Great Queen-street, were left. How long did not the line from Bedford-street to Cranbourne-street remain unmade? The fame of New-street as the thoroughfare to Covent Garden is it not recorded in a file of the "*Times*," in a letter of poor Albert Smith's, written as he sat in his cab that had incautiously entered the defile, when taking him to dine at the old location of "The Garrick," in King-street?

More is due to Mr. Pennethorne than people generally are aware of; and more would have been due, had he not been interfered with injudiciously. And to Mr. Jones himself, very much was due as regards improvements in the City, actually effected.

The line to the east of London was to have started from Hart-street,—the projecting block of houses between that street, or Vernon-place, and Theobald's-road being removed: thence the line was to cross Saffron-hill and Clerkenwell-green, and to get to Old-street; thence it was to go to the Eastern Counties Railway Station; and thence past Spitalfields Church, to join a line crossing Whitechapel and leading to Leman-street, and under the Blackwall Railway, to the Docks. For Spitalfields, a line was proposed by Messrs. Jones and Higgins that is said to have been called in committee "the dog's leg line." The Theobald's-road and Old-street portion of this great route from western London to the Docks has remained to this day incomplete; though the line, nearly in its integrity, is that which has been long accepted as the scheme of the Metropolitan Board of Works,—so much so that it influenced the selection of the course for the Middle Level Sewer. A report, by Mr. Marrable, on the line, bears date 6th February, 1857. In that report, Theobald's-road, Liquorpond-street, and the western end of Old-street were proposed to be widened on the north; Wilderness-row was to be widened on the south; Hart-street, King's-road, and by far the greater portion of Old-street, were to be untouched; and a junction was to be made between Liquorpond-street and Clerkenwell-green, crossing Victoria-street, and another between the Green and Wilderness-row, crossing St. John's-square. The present proposal however includes a modification of the line at the east. In place of the existing junction with the High-street, Shoreditch, considerably to the north of the Great Eastern Station, a diagonal line will be taken from a point in Old-street-road, to the Station, direct.

We have somewhat anticipated a statement, which may be here made, of the scope and sum of the conclusions of the Committees of the House of Commons. The conclusions of the Committees of 1836, 1838, and 1839, appeared in a report, which set forth as amongst the improvements pressingly required:—

1. A new street from Coventry-street, Piccadilly, to Long-acre.
2. A new street from Bow-street to Holborn.
3. A line to continue Oxford-street into Holborn.
4. A spacious thoroughfare from the Docks through Whitechapel to Spitalfields Church.

The whole of these improvements were gravely estimated at 200,000*l.* The London Bridge approaches, including Moorgate-street, we believe had cost more than 2,000,000*l.*

The Commissioners of Woods and Forests were authorised to carry the four improvements specified, into effect; and the money was to be borrowed on security of the coal and wine duties. The Commissioners, however, found that the four lines would cost more than 638,000*l.*, as the "net outlay,"—or after deducting from the total outlay, of more than 1,367,000*l.*, the estimated return from property, 728,783*l.* The greatest of the four amounts of *total outlay* was set down for the Oxford-street to Holborn line: it was 455,359*l.* 19*s.* 10*d.* But in the column for "net outlay," the Piccadilly to Long-acre line stood highest: it was 239,599*l.* 12*s.* 9*d.* We believe that no new street has ever been found to repay its cost from increased value of premises; but, the truth is, for the public authority to leave out of the calculation the item of increased value of property in the quarters to which the street leads, and the general gain, is erroneous, and serves only to mislead judgment as regards public works.

The effect of the estimate of 638,000*l.* was that a committee of the House considered the subject again, or in 1840. "The result," truly predicted a writer, in 1841, in the *Westminster Review*, "will one day be universally lamented." This writer, in an article to which we have been slightly indebted, went on to say,—"The committee, instead of confining themselves to the task (no difficult one) of considering how the money was to be raised,—instead of reflecting and urging upon the Government that London is not a village, not even an ordinary town, but a province of houses, expending upon local objects, such as watching, paving, lighting, the relief of the poor, and public hospitals, a revenue larger than that of many European states; that two millions sterling are annually spent upon these and similar local objects, exclusive of Government taxes; that London, the capital of the vast British Empire, contains within itself a greater mass of concentrated wealth than exists in any other spot on the globe, and therefore that it could not be worth a moment's hesitation whether 180,000*l.* per annum, rather than 80,000*l.*, should be devoted to public improvements,—instead of so thinking or acting, the committee at once abandoned the original plans, ordered new ones to be prepared, embodying the economical suggestions of Messrs. Jones and Higgins, widening old streets instead of forming new ones, and making straight lines crooked to save expense. Had the committee taken only one of the original plans and carried it out, deferring the others to a future period, they would have adopted a much more satisfactory course: what would then have been done, though little, would have been well done; but now each improvement is made to stop short of the object, and several of the lines are wholly spoiled." How often in the five-and-twenty years since this was written, have we not read a similar condemnation of the system which has almost to the present moment been maintained, and of which the defects are visible, as foreseen? The saving effected by the committee was only 239,000*l.*: that is to say, in place of 638,000*l.*, the estimated outlay was now 399,000*l.* The Coventry-street to Long-acre improvement was to cost 120,000*l.*, and the three other lines 279,000*l.* together. Other improvements, however, being forced upon the attention of the committee, various sums were set down for them: so that at length the total estimated amount was 538,000*l.* With the view of meeting this expenditure, different Acts were passed, one of them extending the period of the termination of the coal and wine duties to the 5th of July, 1862. The added projects comprised a street to continue Farringdon-street to Clerkenwell Sessions House, estimated at 25,000*l.*; a Southwark line from Blackfriars to London Bridge, 35,000*l.*; the removal of Bank-buildings (which occupied the ground in front of the Royal Exchange, where the Wellington statue is), 40,000*l.*; and "Mr. Wason's street, in Westminster," 39,000*l.* As to the first of these, it may be observed that the committee were satisfied with forming a broad street to about half the distance of the point which should have been taken as the destination. A similar system was observed in the case of the line in eastern London. As to the new street there, it was said the only apparent object of its formation was that of allowing the seamen about the docks to attend Spitalfields Church. The Westminster line of street sanctioned, started from near the same point opposite the Abbey, as the present Victoria-street: but then the line ran northward of the present street; and instead of going to the end of the Vauxhall Bridge-road, and serving in the best manner the traffic from Eaton-street and Grosvenor-place, it ran into the Chelsea-road (now Victoria-road), opposite no street westward. This scheme, at least, was improved upon, or in the point last referred to.

The Clerkenwell, Westminster, and Southwark lines belonged to the class of private undertakings, being only to be assisted by the grants that have been specified. These grants, by certain clauses of the Act 4th Vict., cap. 12, were subject to the condition of proper security being given to the commissioners for the completion of the improvements. We must take another number for the completion of our review.

Liquid Meter Company.—We think it worth while to draw the attention of our readers to the advertisement of the Liquid Meter Company in our present number. The prospectus contains a report from Mr. T. G. Barlow approving of the machinery for manufacturing the Company's meters and of the meters themselves. The share capital of the new Company is to be 100,000*l.*, to be raised in 10*l.* shares.

THE FAIRY GOLD OF BOMBAY.

WE live in a sceptical age. The rising generation, if we may judge from the periodical, no less than from the controversial, literature of the day, seem to be offered only a sort of Hobson's choice between unbelief and misbelief. Not only are the most venerable of institutions, the most ancient of creeds, bowing and swaying like vessels in a rising storm that threatens to tear them from their anchorage, but trust between man and man, reliance on the good faith of your neighbour, rigid adherence to that punctilious truthfulness which once was considered the point of honour for a man, are not what they were when the century was young. There are many people who confound untruthfulness with imagination. Their moral code is narrow and angular. They are at a loss to distinguish between a lie and a fairy tale. They dwell, in appropriate verse, on the sin of purloining a pin. The unfortunate children who reap the benefit of the educational views of people of this way of thinking are apt to grow up with some of the nobler faculties altogether undeveloped. Under an education intended to be eminently practical, their brains are served like the livers of the unfortunate geese destined to form the famous Perigord pies of our neighbours across the Channel: they are forced into an unhealthy development at the cost of the general health.

Such are some of the reasons why fairy tales are banished from the nursery and forgotten in the drawing-room. The nursery Niebuhrs of the day have demonstrated that Jack the Giant Killer never existed. His legend is replaced by useful knowledge. And so it has come to pass that the vital undying truth of some of the most ancient forms of teaching, the lessons spoken by the beasts and birds to Æsop, and the inner meaning of yet more ancient and venerable parables, fail to teach the mind of young Europe. Natural history has taught that enlightened youth that the fox has not the organs of speech. Then why waste valuable time on a story of a fox and a crow. Literal exactitude, *au pied de la lettre*, turns out to be impossible. No time is lost in the inquiry whether there be not a deeper and more important meaning in the heart of the ancient teacher than that of any accidental chain of occurrences.

The echoes of a fairy story, as magical in its transformations and as instructive in its moral as any of those of the Thousand and One Nights, are yet resounding in our ears. Bit by bit the story has come in, mail after mail. No one yet has taken pen in hand to sketch the fortunes of the Aladdin of our day. A subject of the same gracious Sovereign that rules our island, a man among ourselves in interest, in the relations of business life, separated only from us by geographical distance, an Eastern favourite of fortune, has found a store of fairy gold, and has found it turn to withered leaves in his purse.

Many of our readers may have observed from time to time dusky, sharp-eyed men, gliding through the streets of London with their heads arrayed in something between a mitre and a turban. They are known as Parsees. To our unaccustomed eyes one is much like another. But those who are acquainted with the Hindoo physiognomy would have detected in that of the hero of our tale something keener in his glance than that of the very keenest of his brethren. Nor was that all; genial and generous qualities were not wanting. In a country where the beggar of to-day is the banker of to-morrow, there were in this man more than an ordinary share of the qualities that command success. He was one who knew how to make a munificent use of money.

So money came to him. What was his bargain with the fairies he has not told us. How from a hawker of small wares in the bazaar, he grew into one of the principal merchants in Bombay; how he was first tolerated, then trusted, then blindly followed into all the details of a brief and rapid career, we have no time to enter. But while he was making the most of the gifts of his fairy godmothers, an event occurred in a very distant portion of the world which had the result of pouring a steady stream of hard silver into Bombay. The flame of war suddenly broke out in those great cotton-fields which supplied the English looms. Cotton ceased to be grown there, for the growers were too busy in the task of destruction to heed their accustomed agriculture. Of the cotton in store, some was burnt by the enemy, in order to injure the growers; and some was burnt by the growers, in order to injure the enemy,—to keep it from falling into their hands. A great cry went up from Lancashire,—its thousands of looms were stricken dumb by the cotton famine. The Englishman, ever most helpful and most hopeful in his extreme need, sought for the great staple of his industry wherever the climate would produce it; and finding much at Bombay, he sent ship-load after ship-load of silver to procure it.

The influx dazzled the excitable population. Wealth at last was pouring upon them. With fewer means for the disposal of wealth than are to be found in Europe, an Eastern people give more visible signs of its presence. They buy costly gems; they build houses like those of the genii. One man was said to go so far as to make the tires of his cart-wheels of silver. Then they set themselves to increase and improve the flow of wealth. They formed companies to encourage the production and to provide for the pressing and shipment of cotton. They drew plans for reclaiming from the sea and from the marshes the site of a new city. All their actual wealth was as nothing to the promise of the future. Thus the shares of the new companies commanded a constantly rising market. In July, 1864, long before the tide had come to the full, the shares of the Victoria Land and Piers Company, with 400*l.* paid, were at 2,700*l.* premium. The shares of the Elphinstone Land and Piers Company, with 1,950*l.* paid, were selling at 6,800*l.*; the shares of the Bombay Reclamation Company, with 500*l.* paid, were at 2,000*l.* premium; the shares of the Colaba Land Company, with 1,000*l.* paid, were at 6,400*l.* premium. The property of Premchund Raichund was estimated, by those who were said to be well informed, at seven millions sterling. The pessimists—there are always depreciating people—would not admit that, everything paid and cleared up, he could be worth more than three millions. Sixteen banking establishments took care of his daily more valuable share certificates or advanced him rupees on their security.

Premchund Raichund made good use of his golden time. At a period when men are wont to hear very unpleasant truths, few or no stones were thrown at him. His energy and pluck were spoken of when he was down, as well as when he was up: he had made his name known in London, as well as in Liverpool and in China. The best idea that any untravelled Englishman can form of the wonderful mosques and temples of Ahmedabad, is due to the generosity of Premchund Raichund, who gave 2,000*l.* towards the expenses of publishing those magnificent volumes. When it was proposed at Bombay to erect a grand palace of glass and of iron, and to hold an international exhibition after the fashion of London, of Dublin, and of Paris, the money of the successful Parsee was freely forthcoming. When hesitation rose in England as to the funds, he took, by telegraph, all the burden on himself. The scheme, indeed, has not advanced beyond the preparation of the plans and models of a structure which would have been unrivalled in its beauty among any of its class; but for the stoppage, events of another character are responsible. The wealth of Premchund Raichund does not seem to have raised up enemies, rapid and enormous as was its growth.

The time came when that which had sprung up in a night perished in a night. The people of the cotton-growing country, which had been desolated by war, suddenly left off fighting. It was not exactly the case that all who could fight on the weaker side had been killed, but it was as near this as possible. They held out to the last, and when starved and tattered, without powder, without rails, without supplies from Europe, or money to buy them, the defenders suddenly broke down, the shock was as great as if such an issue had been impossible. Down came the price of cotton, down came shares and stock,—down came millionaires and capitalists; down, last of all, came Premchund Raichund. Bombay held its breath when he tottered, and when it transpired that his debts and liabilities amounted to three millions and a third, and his assets to under a million and a half, there was a feeling of relief that matters were no worse.

How the millions at command in 1864 had diminished, how the fairy gold had turned to withered leaves in the very coffers of the bankers, may be readily understood by a glance at the prices of the shares which had, at the earlier period, attained such fabulous premiums. Greatly reduced is the length of the share list, and very significant are the lessons to be drawn from its perusal. A share of the Victoria and Colaba Land Companies, now quoted as united, is, at the present time, worth 120*l.*, a fifth of the sum actually paid—the former quotation (far from the highest) having been seven and a half times the amount paid, and the depreciation being to less than the thirty-seventh part of the former selling price, or three thousand seven hundred per cent. The shares of the Reclamation Company, 500*l.* paid, are at 70*l.*, instead of 2,500*l.* The shares of the Elphinstone Land Company are quoted at 64*l.*; and yet the fall in the price of cotton, the direct agent both of the inflation and of the collapse of this speculative wealth, has only been from 575 rupees to 290 rupees for the candy of 784 lb. A fall of one half in the value of that prime article of speculation which ruined such a fabric of real and imaginary prosperity as it increased, has produced a fall eighteen times as great in those subsidiary speculations by which the new-found wealth sought to increase itself. Since the time of the famous Law, the projector of the Mississippi Bank and the South Sea Bubble, a financial reverse of such a magnitude has been unknown.

The lesson has significance for ourselves. After a period of commercial depression of unusual severity and unprecedented continuance, there are signs that lead to the belief that the lowest point of ebb has been reached. For the first time since the black Friday in last May, there appear to be signs of returning confidence on the part of the public. Without venturing on prediction, we can yet see that the various elements of disturbance which have menaced and have broken the peace of Europe are for a time likely to be comparatively inactive. No great political question presses for the arbitrament of lead and steel; and more than that, the result of the seven weeks' war has been the conviction that none of us are in a state of exact preparation for fighting. We are not only remaking our fire-arms, but, further, we have come to the conclusion that we must reconstitute our armies. To keep few men under arms during peace, and to be able to summon a nation of soldiers under the colours in time of war, is the avowed object of the military reforms contemplated all over Europe. With the political lull—with the great wealth of the country but little impaired by the misfortunes of the year—with the objects of investment curtailed by the arrest of speculation, it is impossible but that the rebound, whether it has commenced as yet or not, will be marked by new and peculiar features. What these may be it is as yet idle to speculate on. It may be unprecedented rapidity in the rise of values; it may be a yet more unprecedented prudence. In any case, it will be the part of wise men to act rather from reason than from mere blind sympathy—to remember that, alike in a rising and in a falling market, everything is exaggerated by those who rush with the herd; and that amid the rough and ready methods of arriving at the value of property, the measure of what it has cost, imperfect as it may often be, is still less wild than the measure of what it will, at the moment, fetch. Well will it be for us if we remember how leaves of paper turned at the touch of the Indian magician into gold; and how the gold, in a few short months, turned back into withered leaves.

PROPOSED LIME STREET STATION HOTEL, LIVERPOOL.

A LIMITED competition of designs for the new hotel for the London and North-Western Railway having been invited, six sets were sent in. The first premium has been awarded to Mr. A. Waterhouse, London; the second to Messrs. Culshaw & Sumners, Liverpool; and the third to Messrs. Banks & Barry, London. The other competitors were, Messrs. Picton & Son, Liverpool; Messrs. Walters, Barker, & Ellis, Manchester; and Mr. E. M. Barry, London.

The building will form a new façade to the station, which is being considerably enlarged. The site, probably the finest for an important public building in Liverpool, was originally of a somewhat irregular shape. While, however, the architects were at work, an arrangement was entered into with the corporation, by which Lime-street will be widened, and the site made rectangular. No opportunity has been afforded for comparing the merits of the several designs, and we must confine ourselves to some particulars of the selected design, and Mr. Waterhouse's own views in preparing it.

St. George's Hall being so close to the proposed hotel, the author of the design has thought it best to allow the horizontal line to predominate in his elevation, so as to present no violent contrast to the great building opposite.

The design, as drawn, is intended to be built externally of pressed red brick and Huddersfield stone. The whole of the building will be fireproof, the floors being supported by wrought-iron girders, filled in with concrete, known as the "Dennett arch." The iron columns supporting the internal walls will be enclosed in a casing of terra-cotta. This, while affording, in the coffee-room and other rooms on the ground-floor, a valuable decorative feature, would insure a perfect protection to the columns themselves in case of fire.

Entering the building from Lime-street, to the right and left of the entrance-vestibule, reached by a few descending steps, screened off from the vestibule, are the hall-porter's day-room and sleeping-room. A flight of nine steps, 15 ft. wide, leads into the hall, 33 ft. by 30 ft. 6 in. The principal staircase is opposite the main entrance, while underneath the staircase is the entrance from the station. Opening into the hall are the inquiry-office and luggage-room; through the latter lifts pass to every floor of the building, including the basement, where there is a large room for "left luggage." The hotel-bar, 17 ft. by 9 ft., also opens into the hall, and commands both the entrances. Behind it is the bar-parlour, 17 ft. by 14 ft.; while descending from it is a private staircase into the dispense wine-cellar, with a wine-lift passing through the hotel-bar, to give the manager an effective check upon the wine consumed. The hall is lighted by the staircase windows. From the hall a corridor, 10 ft. wide, lighted by open arcades below the skylights over the mezzanine passage, extends both ways. Turning to the left we successively reach the hydraulic ascending-room, transporting visitors to the upper floors; the smoking-room, 25 ft. by 29 ft., with a recess, 12 ft. by 12 ft.; the dining-room, 39 ft. by 29 ft., with a serving-room and dinner-lift at its back; and the billiard-room, 25 ft. by 18 ft., lighted from the top as well as the sides. Returning to the hall, and taking the corridor to the right, we come on the one side to the reading-room, of similar dimensions to the smoking-room, and the coffee-room, 63 ft. 6 in. by 29 ft. Behind the coffee-room is a serving-room, with hot-plate and lift from the kitchen; also a still-room and china-pantry. On the other side of this corridor are three sitting-rooms, averaging 17 ft. by 12 ft. 6 in.

A convenient service staircase is placed in each wing, at the back of the staircases leading to the Mezzanine story, which is over a portion of the ground-floor. On this Mezzanine story are placed twenty bedrooms and a dressing-room, and thus a considerable amount of this accommodation is provided near the ground-floor level.

The first-floor of the hotel is contracted in width. The principal staircase from this floor upwards, is thrown over the hall, and is lighted from the top.

Opposite the staircase on the first-floor is the ladies' coffee-room, 39 ft. long by 19 ft. average width, with a balcony over the principal entrance. On the one side of this coffee-room is the library, 21 ft. 6 in. by 12 ft., and on the other, a still-room, 16 ft. by 12 ft.

In the basement are the kitchen, 52 ft. by 28 ft. 6 in.; a vegetable scullery, 28 ft. 6 in. by 20 ft.; and kitchen-maids' rooms on the one side of it, and on the other, the cook's office and store-rooms. A serving-room is behind the kitchen, with a dinner service-room.

A railway is provided down the principal corridor of the basement, with turn-tables to facilitate the carriage of stores, coals, and dishes.

A NATURAL SYSTEM OF ARCHITECTURE *versus* A NEW STYLE.*

> "Oh how unlike the complex works of man,
> Heaven's easy, artless, unencumber'd plan;
> No meretricious graces to beguile,
> No clust'ring ornaments to clog the pile;
> From ostentation as from weakness free,
> It stands like the cerulean arch we see,
> Majestic in its own simplicity."—*Cowper.*

The subject of the present paper will suggest to the minds of many the fanciful hypotheses of Vitruvius, that the Doric column was proportioned from a robust man,—the Ionic column from the female figure,—the capital fashioned with graceful curling hair, the flutings expressing her petticoats,—and the delicate young girl and the Corinthian column, with the basket of trinkets and the tile placed on the root acanthus; and also the poetical origin of Gothic architecture traced by Dr. Stukeley, Bishop Warburton, and Sir James Hall, that the "slender pillars of those verdant cathedrals of antiquity" were taken from groves, whilst other portions were in imitation of wicker-work, or the interlacing of wands or twigs. These *sports of fancy*, as Britton very properly terms them, are foreign to the object I have in view; my opinion being, that in architecture we should not copy, but endeavour to construct and decorate our buildings as Nature would have done, had she not ordained that man must be his own architect and builder.

Many conjectures have been ventured on the origin of architecture; some writers have described mankind in early times forming habitations in the sand, scooping out trunks of trees, rearing tents of hides, making holes in barren rocks, walls of mud, with roofs of rushes, &c., and afterwards erecting huts and cabins.

As regard the origin and progress of building, these theories may be truthful, but as far as fine art is concerned, until a building became ornamental and decorative, we had no architecture. No theory of form or colour could be expected in these early days, although by chance a cube might have been selected as a form for a dwelling, and a savage may have harmoniously tattooed his face, still it required the education of an enlightened period to fully appreciate the teachings of nature.

Architecture, as at present studied, is influenced by fashion; the creation of a new style would satisfy only for a time, and that probably of short duration. The production of a style of architecture, however, ever varying, yet always the same, based upon natural principles, and presenting like the universe, the flowers, &c., an immutable system, not subject to ignorant fashions or changes, would be a great desideratum.

The laws relating to *colour* are by writers more fixed and determined than those connected with *form*; consequently the polychromy of buildings and the fine arts can be defined with some degree of certainty. With regard to *form*, the reverse is the case, and hence the cause of so great a variety of opinions, which reduces the subject to a *mere matter of taste*, and thereby prevents that important element of the mathematics, viz. geometry, from exercising its power over architecture and the fine arts, to the extent that it did in former times, and might and ought to do at the present day, so as to insure that precision and truthfulness upon which beauty depends.

The architect of Chelsea new church, speaking of the proposed new London Bridge in 1823, says, "if it were a *question of taste only*, such as to decide an elevation or the decoration of it, I should remain silent; but as the question is upon principles of construction, implicating stability and security, which are capable of being discussed with logical precision, and correct conclusions being deduced therefrom, I think it right to press their consideration."

Hogarth, in his "Analysis of Beauty," in 1810, was bold enough to suggest a new style of architecture: he says that, "I am thoroughly convinced in myself, however it may startle some, that a completely new and harmonious order of architecture in all its parts might be produced by the following method of composing, but hardly with certainty without it; and this I am the more apt to believe, as upon the strictest examination, those four orders of the ancients, which are so well established for beauty and true proportion, perfectly agree with the scheme we shall now lay down. This way of composing pleasing forms, is to be accomplished by making choice of variety of lines as to their shapes and dimensions; and then again by varying their situations with each other, by all the different ways that can be conceived. In a word, it may be said, the art of composing well is the art of varying well." Hogarth advances nothing definite, his idea of form reminds me of the productions of the kaleidoscope; and his proposed ornamentation can hardly be considered an advance upon the classic modes,—it rather partakes of his humorous nature. For a new capital, he suggests the forms of hats and periwigs, which in a skilful hand, he says, might be made to have some beauty.

A new system of decoration will not create a new style, although a new mode of construction may have a tendency in that direction. Robert and James Adam, in 1822, diversified the ornamentation of capitals, friezes, &c.; but the architecture was still classical, notwithstanding its novel treatment.

In 1845 "a fundamentally new architecture" was suggested, "to embrace the whole range of metallic substances, and admit the adaptation of all and each of them, in every form and method of preparation, in which science and manufactures may render them available for the respective purposes of such an art, and thus attain, not only the legitimate and consistent effects of a metallic architecture, but also be enabled to realise thereby a higher order of beauty than it is possible to produce in the material of stone." Neither decorating buildings with pure metals, nor with porcelain coating, will create a new style. Iron combined with stone will effect a new treatment, and give a greater breadth to buildings, and lead to the discontinuance of that inconvenient mode of separating the nave and aisles in churches with detached columns or piers.

In an article on the "Past and Future Developments of Architecture," in the *Ecclesiologist*, 1846, we are told that "we have numberless faults to account for, and an incalculable amount of ignorance to overcome, before we can hope to do anything towards developing any future degree of excellence in Christian art. We have not yet learned our alphabet, and it is absurd to attempt to compose. All that we can expect to do is to copy carefully, in hopes of realising at the last, through numberless copyings, some first principles which we may store up for our children to make use of." No new style was ever produced by copying, and never can be.

Professor Cockerell, with truth, observed that he saw no reason to suppose why, in these days, there should not be originated a new style of architecture; but, at the same time, he considered that all styles of architecture, from the remotest to the most recent time, were deserving of study, as being founded upon some grand principle, and as tending to advantageous results.

In selecting our own starting-point, Mr. Hope contends that we should, in preference to adopting the civilization of the Egyptians or the Assyrians, the Greeks or the Romans, all of which had passed away, select that of our own ancestors.

Even taking the culminating point of the architecture of the fourteenth century, and starting from that, will no more realize a new style than the further development of the best period of the architecture of the time of Pericles. To say that there can be no new style is unreasonable. The styles of Egypt, Greece, Rome, and the Middle Ages, now form our architectural classics,—to be consulted for reference, not to be copied.

M. Cæsar Daly says that there is not, at least to our knowledge, a single building erected in Europe within the last fifty years which is not to some extent a work of archæology; and that eclecticism, or the amalgamation of styles, will not suffice to form a new style of art, but it will be of the utmost use as affording a road to it, and providing materials.

Invention in architecture, according to M. Lassus, is the combination of great dispositions together, and even of certain details. Abstraction improves, in some degree, upon the form and the style; and this is so true, that a superior artist might very justly modify the style adopted, while preserving the dispositions of a plan.

A writer in the *Builder* thinks that the only chance to obtain a new style is to get a grant of some out-of-the-way island; there beget sons and daughters; duly instil into their youthful minds wondrous notions of the greatness of old mother England, and of her glorious architectural medleys; and after these feelings have worked some two or three hundred years, a stray steamer or a wandering balloon will make a grand discovery, and astonish the world by reports of the new style, which these long-lost islanders had worked out for themselves.

However praiseworthy it would be for the inhabitants of the island to create their own style, it would be discreditable on our part to borrow their brains instead of using our own. It would be equivalent to visiting Venice, and copying its ill-proportioned corkscrew columns, its piebald and streaky brickwork, &c., and then grafting them on the architecture of the fourteenth century, and terming it a new development.

* By Mr. W. Pettit Griffith, F.S.A. Read before the Liverpool Architectural Society, November 28th inst.

Perhaps, says Ruskin, the first idea of a young architect in these days was to think it incumbent upon him to invent a new style worthy of our times and country. He thought that if they were not content with a Palladio, they would not be with a Paxton; and he prayed them to get rid of the idea of there being any necessity for the invention of a new style.

More recently the "Creation of a New Style" occupied the attention of the Manchester Architectural Association. The writer suggested that by uniting the properties of construction and decoration in Classic and Gothic, they would form a new and perfect basis of construction.

It may be instructive to those who are desirous of creating a new style, to bear in mind that the pure and favourite existing styles are characterised by a remarkable unity of design. The Doric, Ionic, and Corinthian orders of Greece are well known to have suitable mouldings and decorations adapted to each order; and the Early English, Decorated, and Perpendicular styles of the Mediæval period, are each unique. In the Early English, the arches of the windows and doors are acutely pointed, and so is the roof; in the Decorated, the arches are often equilateral, and so likewise is the pitch of the roof; in the Perpendicular, the arches are obtusely pointed, and the roof is the same.

Much has been written on the creation of a new style, and some essayists have approached the subject with good common sense, and apparent truthfulness; architectural design, observes one writer, should not only not be confined to one style—it should not be confined to any number; for beauty resides not in style, but in a vital principle that existed anterior to all styles, and to which all true styles owe their origin. And, again, the great prototype of architecture, nature, has many styles of beauty, and employs them all.

Algarotti and others speak of the absence of anything in nature on which architecture can be modelled. It would have been no compliment to human reason if literal models had been provided for man's dwellings, the more especially so if we look around us and observe the wonderful ingenuity and instinct exhibited by the feathered tribe, and even by insects in forming their nests and places of abode. Natural history abounds with illustrations; the delicately and fastidiously-correct architecture of the honey bee, for instance, has been very carefully elucidated. This beautiful illustration of the geometrical development of the cell by the honey bee was well calculated to awaken the attention of man to the importance of proportioning his works by geometry; the lesson has not been lost sight of, as the almost universal employment of the equilateral triangle by the Roman and Mediæval architects, has been acknowledged long ago. It would be a great desideratum if architects could be persuaded to study more deeply the works of Nature.

Nature's mode of roofing has been referred to as being derived from the manner in which the bodies and limbs of birds are covered with feathers. Thatch, shingles, weather-boarding, tiles, slates, &c., have all long been used in this way.

The ramifications of the ribs of the numerous examples of the Gothic vaults afford another illustration of the knowledge which the Mediæval architects had derived from Nature's works; each rib has its proper place and its evident use, the weight of the vaulting being equally distributed and supported. In all manner of vaults, let them be of what kind they will, we ought, urges Alberti, to imitate Nature, who, when she has knit the bones, fastens the flesh with nerves, interweaving it everywhere with ligatures, running in breadth, length, height, and circularly. This artful contexture is what we ought to imitate in the joining of stones in vaults.

Regarding the cause of vegetable symmetry, it has been asserted that a system of equipoise which is to be regarded as the manifestation of a centrifugal vital force, exerted in every direction equally, is discoverable throughout the vegetable kingdom in all its parts. And Sir Isaac Newton says that the phenomena of nature are mutually impelled towards each other, and cohere in regular figures, or are repelled and recede from each other.

In 1834, Inwood directed attention to the geometrical forms available for architectural purposes in crystallised minerals. The doctrine of the relations of crystalline forms, termed crystallography, is an application of solid geometry; its connexion with mineralogy is well known. Minerals occur very generally in the state of crystals, that is, in certain definite and symmetrical forms. Solid bodies have primary and secondary forms as well as plane figures.

The origin of geometry by Herodotus combined with another attributing the science directly to the gods, forms the first light which we have on the subject, and both in one are worthily sung by the poet who figures at the head of an obsolete English course of mathematics:—

> "To teach weak mortals properly to scan,
> Down came geometry and form'd a plan."

Leaving the origin of geometry to "the gods," I will allude to suggestions given us by Nature to aid the production of most regular and beautiful forms; for instance, "the treasures of the snow." Scoresby has drawn ninety-six varieties of these crystals; and Glaisher, without the aid of a glass, determines their primitive form to be that of a hexedral or six-rayed star, forming the base of every crystal, however complex may have been its structure. Scoresby, however, has seen in the crystals in the Arctic seas an internal multiplication or a series of inner markings within the crystals, which indicated a high degree of crystallisation; Glaisher has since observed this in this country. These illustrate in a remarkable manner the interlacing or multiplication of equilateral triangles, producing the hexagon, &c.

Prior to demonstrating the results to be obtained from basing architecture upon natural principles, I will briefly analyze the forms created for our use, and then apply them to the purposes proposed.

Form is the manner and mode in which a thing is presented to our conceptions; and figurability is necessary to matter: since matter is not infinite, it must be circumscribed within certain limits and bounds on every part, which constitute the figure of the body.

Of all the infinite variety of forms or figures which matter is liable to, there are only *five* which will admit the particles of matter, placed together, to fill the space between them completely, or so as to leave no pore, vacuity, or interstice between them; and bodies of these forms have been known by the general name of the five Platonic bodies.

In systematic works upon colour, writers usually commence by referring to its source, viz., light; but when form is mentioned, no original cause is given, beyond a few definitions taken from the first book of Euclid's "Elements."

It must be borne in mind that through architects, in modern times, having been content with the works of the ancients, architecture has been an exception to the law of progress; therefore to successfully analyze early forms modern mathematics will not assist us.

All the splendid edifices of Egypt, and most of the classic buildings of Greece, were erected before Plato or Euclid was born; Plato treated of, or described (but did not create), the five regular solids (Platonic bodies); and Euclid, as Proclus informs us, compiled his "Elements of Geometry" to explain their singular properties. Prior to the time of Plato, also, the conic sections, or those curves which are found on the surface of a cone by a plane cutting it in different directions, were not discovered. The beautiful temples of Greece were consequently not matured by the higher or sublime geometry. Even the application of algebra to geometry was entirely unknown to the ancients, although it has been the direct cause of the great extension of the modern mathematics.

Sir Isaac Newton and other geometricians have often alluded to the simplicity and elegance of the ancient geometry, which only admitted the straight line and the circle into its elements. No other curve than that of the circle was acknowledged. The properties of numbers and geometrical figures were investigated by the early Greeks for their own sake, abstractedly and without reference, as in the present day, to the body of mixed sciences dependent upon them.

Equations, says Newton, are expressions of arithmetical computation, and properly have no place in geometry, unless so far as quantities truly geometrical (that is, lines, superficies, solids, and proportions), may be said to be some equal to others. Multiplications, divisions, and such sort of computations are newly received into geometry, and that unwarily, and contrary to the first design of this science. Therefore these two sciences (meaning arithmetic and geometry), ought never to be confounded. The ancients did so industriously distinguish them from one another, that they never introduced arithmetical terms into geometry. And moderns by confounding both, have lost the simplicity in which all the elegance of geometry consists.

A real mathematician is not so much he who has got an expert knack of giving us solutions of problems algebraically, heaping up speculations (many, perhaps, useless), of quadrations, infinite series, and the like, as he who is thoroughly master of the *geometry of the ancients*, and especially has imbibed their method of demonstration.

One of the reasons which may account for the unsuccessful attempts to analyse ancient art, has been through investigators attributing to architects in early times a greater proficiency in mathematics than they ever attained. I think that the early geometry of Egypt and Greece was of a simple character, otherwise Pythagoras's discovery, that "only three polygons, or regular plane figures, viz., the equilateral triangle, the square, and the hexagon, can fill up the space about a point," with other trifles, would not have been recorded.

The three primary rectilineal figures of form, viz., the equilateral triangle, the square, and the pentagon (derived from the surfaces of the tetrahedron, the hexahedron, and the dodecahedron, regular solids) were not created by man, but derived from nature; and these elements, with their compounds, the hexagon, the octagon, and the decagon, may be traced in nearly all the various styles of architecture.

In Mediæval architecture these elements of form have been embodied with great consistency, and the result is that this style approaches in its construction and decoration the manner or method with which Nature would have undoubtedly proceeded if architectural productions had been under her care. To prove this position, the hexagon can be traced in the plan of the church of Cobern, in the north porch of Redcliff Church, &c.; the octagon, in the baptisteries at S. Lorenzo, Milan, Novara, Ravenna, Bologna, Parma, Verona, Cremona, Volterra, Pistoia, Florence, &c. In England, the baptistery in Luton Church, and by far the greater number of fonts; the chapter-houses of Wells, York, and Salisbury Cathedrals, Westminster Abbey, &c.; the decagon in the chapter-houses of Lincoln and Worcester cathedrals, and the temple of Minerva Medica, Rome; the dodecagon in a building at Canossa.

A natural system can also be traced in the formation of pinnacles and other details of mediæval architecture, analogous to the alternating process to be observed in the vegetable kingdom. These laws or principles are not confined to Mediæval art; they regulated likewise the works of the architects of Egypt, Greece, and Rome.

In early times the square was the figure employed in designing buildings, as illustrated in Solomon's temple, the Egyptian temples, the Greek temples, &c.; but in the Roman period, coeval with the birth of our Saviour, the equilateral triangle (symbolical of the Holy Trinity) became the universal favourite.

Natural forms, infinitely various, are available for constructive and decorative purposes; they pervade every style of architecture; their prototypes are to be found in the animal, vegetable and mineral kingdoms. It has been stated that, "if Grecian columns, Gothic pinnacles, and all the Classical and Mediæval details which now make up the stock in trade of an architect, were abandoned, it would be difficult to find substitutes in their place." Now, it is clear, that so long as the world lasts, architects are perfectly free from and require no such trammels. A profound knowledge of the book of nature, and a general education, with a plain ruler and compasses, is all the stock in trade (as far as architecture is concerned) necessary for the profession in any part of the globe.

There is more to be learned from nature than many imagine, and this is not to be wondered at,—

> "For who adores the Maker needs must love his work."
> *Michelangelo.*

Bernard Palissy, we are told, was a man of whom it was said by Buffon that he was so great a naturalist as nature only could produce. Palissy himself describes the source of his fame by saying that he had had no other book than "the heavens and the earth, which are known of all men, and given to all men to be known and read." He was not Greek, he said, nor Hebrew, nor poet, nor rhetorician; but a simple artisan, poorly enough trained in letters. The ancients, he remarked, were men like the moderns, and that they were quite as liable to be deceived as

we are. He therefore refused to recognise the wisdom of his ancestors, and, turning away from books, he, to use his own words, "scratched in the earth for the space of some sixty years and upwards, and searched among the entrails of the same, in order to understand the things which she produces in herself."

If we despair of a new style, there is one certain point which may be realised, and that is the object of the present paper to elucidate, viz., the development of a style founded strictly upon principles dictated by nature. To nature we are indebted for all the perfect elements of form and of colour; and also for the masterly methods of applying form and colour observed in all the animate and inanimate objects throughout the natural kingdom,—

> "If it be true that any beauteous thing
> Raises the pure and just desire of man
> From earth to God, the eternal fruit of all."
> *Michelangelo.*

Unity of style (the true fundamental law of art), and harmony of design, must be considered; and the more so, if a new development is to be of a lasting character. A studied irregularity will not generate beauty, however *picturesque* it may appear to some architects. The more symmetrical, the more beautiful is any form or shape. As with vegetation, so with architecture, distortions and disturbances arise from peculiarities, which are without the pale of systematic inquiry, and not susceptible of being reduced to any fixed rule. In many new churches irregular stone quoins and dressings have been purposely introduced, and no doubt the ancient Cyclops would have preferred them to regular masonry. The beauty of the latter, however, is much preferable to the absence of symmetry in the former.

Twisted columns, though affording very pleasing curves to the uneducated eye, are universally acknowledged to be less beautiful than the common and regular columns; and yet in the Venetian Gothic now in vogue the above fact is forgotten by men who ought to know better.

It will be exceeding the limits usually allotted to a single paper to offer farther preliminary remarks; I will, therefore, at once endeavour in a succinct manner to submit the proposed style already alluded to.

With a plain ruler and compasses only I will now proceed, in accordance with the ancient geometry derived from nature, to prove that architecture, constructive and decorative, can be perfectly produced without any knowledge of ancient or modern styles, let them be from Egypt, Greece, Rome, or the Middle Ages.

The proposed architectural development may be divided into three classes, distinguished in the following manner.

1. Buildings based upon the equilateral triangle, having a power of three, analogous to flowers having three petals, three, six, nine, &c., stamens, and three carpels, as in the iris, the lily, and other plants.

2. Buildings based upon the square, with a power of four, analogous to the order *Cruciferæ*. These plants have all a separate calyx and corolla, each in four divisions; the four sepals being placed alternately with the four petals, the latter forming a cross.

3. Buildings not distinguished by any one primary element of form, but by the combination of all the primary figures.

I must now bring to your mind that to which I have often directed attention; viz., the geometry of architecture, as based upon the laws of nature; the division of primary figures into units or numbers; the alternation of regular figures; the mixture or multiplication of regular figures, regular parallelograms, &c. This method of proceeding, however, must be understood as forming the groundwork of operations in the development of a new and harmonious style of architecture.

I will now assume that a building is required, no matter for what purpose,—say a large hall,—and will take as a key-note the equilateral triangle; let the width of the plan be decided by the base of the triangle, and the length by two triangles, forming a parallelogram; the thickness of the walls will depend upon the materials employed. Make the height one triangle, or more, and the roof one triangle. All splays to windows and doors, chamfers, &c., should form angles of sixty degrees or any other angle generated by the primary figure. The mouldings may be worked out of hexagons.

If a church be the object required, the same harmonious method should be adopted; for example, the plan would be set out and developed by equilateral triangles,—the roof an equilateral triangle, the columns and the font hexagonal,—all splays, chamfers, &c., would form angles of sixty degrees.

In like manner, if the *kleis*, or primary form, be the square, the same unity and harmony should be preserved throughout. The plan would contain one square, or diagonal of a square, one and a half square, or two squares; the height one square more or less in proportion; the roof would contain an angle of forty-five degrees; the columns square or octagonal,—all splays, &c. angles of forty-five degrees, or other degrees produced by the primary figure. The attic windows and mezzanines one square, other windows and doors two squares. The cornices, mouldings, strings, &c., produced from squares, octagons, and so forth.

Had Nature designed our edifices, she would undoubtedly have proceeded in a similar manner. Examine the perfectly regular structures of the vegetable kingdom, in which all the parts are worked out geometrically. The sections of plants usually gives in the numerous works of the scientific botanist will prove this position. The figures are as regular as if they were described by the rule and compasses, and the result is perfect beauty. The architectural sculptor needs the same amount of information of botany as the sculptor does of anatomy, which is simply a knowledge of the external signs of the internal organization. The transverse sections of flowers and fruit offer extraordinary examples of natural geometry eminently suggestive to the constructive architect. Regarding dimensions, the width of the building being determined, this width would be the base of the primary figure selected, and the whole of the building and its parts would be proportioned by it. The edifice would be, as it were, crystallized, and capable of being perfectly analyzed.

It has been said that it would not be inaccurate to represent the birth of vegetation by a circle, and the most accurate method of generating regular figures of form is also by a circle. In the construction of chapter-houses, the round churches, and some polygonal buildings, the groining, columns, buttresses, &c., radiate from the centre to the circumference in exact proportions.

Leo Baptista Alberti observes that some temples are round, some square, and others have many sides. It is manifest that nature delights principally in round figures, since we find that most things which are generated by nature are round. In the stars, trees, animals, the nests of birds, or the like parts of the creation, are generally round. Nature is sometimes delighted with figures of six sides; for bees, hornets, and all other kinds of wasps, have learned no other figure for building their cells in their hives but the hexagon. The area for a round temple should be marked out exactly circular. The polygons used by the ancients were either of six, eight, or, sometimes, ten sides. The angles of such platforms should all terminate within a circle; and, indeed, from a circle is the best way of deducing them.

After a building has been duly proportioned, the next step will be its ornamentation; this I divide into three classes—1. Historical sculptures; 2. Floral decorations; 3. Ordinary carvings.

The panels for the reception of the historical sculptures will be decided by the primary figure guiding the whole building, and dependent for position upon the general design; the decoration will not then be wildly scattered, but confined to appropriate places.

The *kleis*, or primary figure, will, of course, wholly generate the floral decorations. If the equilateral triangle be the key, the foliage and flowers will have a ternary division of parts. And when the square is the prevailing figure of form, the floral decorations will be guided by plants of the cruciferous order. Flowers having quinary division of parts are the best suited for pentagonal forms. And in buildings in which the primary figures of form are united or blended, similar natural productions may be introduced.

Curvilineal forms proportioned by the rectilineal regular figures will be found serviceable; and free-hand curves, duly proportioned, may be selected *ad libitum* from natural productions for mouldings and ornamentation.

A convincing proof of the aid which geometry afforded the Greek architect may be seen in the cornice ornaments represented in Inwood's "Erectheion at Athens," plate 27. The formation of the hexedral flowers is self-evident.

In Taylor and Cresy's "Architectural Antiquities of Rome," plate 60, is a capital, one quarter the real size, from the Temple of Vesta at Tivoli, and in the composition of it may be traced the constructive influence of the triangle; the flower on the abacus is proportioned by two equilateral triangles, and has six petals: the terminations of all the leaves on the capitals are trifoliated. The roses in the frieze have six inner and six outer petals, and the circular ornaments in the frieze contain six foils.

In the floral decorations symmetry should be regarded, or at least a balance of parts preserved. Extremes must be avoided, *id est*, too great a precision, and an overstudied irregularity (one of the great errors of the present period). The disposition of the foliage and flowers may be diversified; it may be vertical, horizontal, divergent, pendent, &c. And another variety can be obtained by combining the vertical and horizontal.

The root or commencement of a branch or stem should either be hidden by the foliage or germinate from or out of the stonework, as if it grew as in nature. This is important to observe, because, unless the floral ornaments be introduced so as to form a part of the building, they have the appearance of being stuck on.

Several writers have suggested that for the nineteenth century we cannot do better than take the French capitals from the cathedral of Notre Dame, and stick natural foliage and flowers on the conventional stalks. I object to this system of patchwork, and would rather recommend that architects designed their own capitals, and adorned them with Nature's laws in a less stiff and more free manner, yet with order and dignity.

As to colour, the same laws derived from nature are to be detected in all styles; it is, therefore, unnecessary to set forth any defined course to be pursued. As a general rule, all colour introduced should assist in developing the various architectural forms and features, and not in destroying them. Gilding when—

> "Chosen with a nice discerning taste,"
> *Cowper.*

materially assists in the illumination of form; it should be delicately applied, and when so done, it, particularly for inside work, is productive of good effect.

In conclusion, having submitted a sketch of the proposed development of a style of architecture emanating from natural principles, enough has been shown to prove that a beautiful system of architecture, of just composition and proportion of parts, can be produced without the aid of the admired styles of antiquity; for, as observed, he that sees the rainbow and the vaulted skies has no need to go back to the arches of Rome and the dome of the Pantheon for his types. But, depend upon it, so long as architects and the public encourage and prefer novelty to beauty, it will be a long time before either a new style or a new development can take root.

ARCHITECTURAL DESIGNS FOR THE PARIS EXHIBITION.

About 200 drawings have been sent to South Kensington and hung in the gallery which contained part of the National Portrait Exhibition, next the Horticultural Gardens. From these, a certain number will be selected, next week, by the "Exhibition Architectural Committee," to be sent to Paris. It is not such a representation as we should desire and might have expected; nevertheless, it includes works from Messrs. Brandon, Banks & Barry, E. M. Barry, Donaldson, Ferrey, the executors of the late Capt. Fowke, Gibson, Giles, C. F. Hayward, Horace Jones, Lamb, Phipps, Robins, Spiers, T. H. Watson, White, Digby Wyatt, T. H. Wyatt, and others.

The drawings are mostly old friends, and include a considerable proportion of designs submitted in competition, that are not to be carried out.

It is to be hoped that the committee will at once mark the drawings they propose to send to Paris, and efforts should then be made to supplement the collection with works that will make it more fully represent the architects and architecture of England at this moment.

Kent Archæological Society.—At a general meeting of this society held on the 20th ult., the Earl Amherst was elected president in the room of the late Marquis Camden.

HOW SANITARY MATTERS STAND IN THE NORTH.

THIS meteoric autumn has seen a mundane movement of scarcely less rarity than that which has just raised all men's eyes to the heavens. There has been a great step made, the influence of which is felt all over the country. Every board of guardians of the poor has been furnished with additional powers to make provision for the improvement of the sanitary condition of their respective unions by an Order in Council; and since this extension of power has been conferred, a survey has been made by the Poor-Law Board of the accommodation provided for the sick poor in the various workhouses, by means of forms sent to the medical officers connected with them to fill up. Some of the boards of guardians have taken the matter up in a very methodical manner, and divided themselves into district committees, and literally visited and inspected every habitation in their unions. Each district committee was deputed to draw up a report of the general state of the portion of the union assigned to it, and to make particular mention of all cases where it considered conditions prejudicial to health existed. In such unions where the investigations have been carried out in this manner a valuable record has been compiled for future use as well as for immediate action. There would not have been much gained if the matter had ended here. To examine a district; make notes of all insufficient water supplies, or deficient drainage, of the too near proximity of privies, ash-middens, or pigsties to dwellings, or the absence of the two former, or of improved substitutes for them; or of overcrowding, or of any other palpable disease-breeding nuisance, is one thing: to set machinery in motion by which most of these evils will be removed or remedied, is another. The latter step materially diminishes the numbers of the cases to be dealt with from head quarters, and consequently lessens a national difficulty. As a course having this end in view has not been decided upon in every union, it may be useful to relate the particulars of an instance where it has been pursued, and to state the result. We make choice of a Northumbrian union for this purpose. On the presentation of the reports of the district committees, fifteen in number, it was resolved to send a statement of the deficiencies or violations in question to the landlords of all properties requiring alterations or additions, with a request that they should comply with the suggestions made. Most of the landlords were noblemen or gentlemen owning large portions of the county, open to the criticism of large circles of friends as well as of the public, who immediately expressed their intention to accede to the views of the respective committees. We would not imply that there was any remarkable concession in this determination. The wonderful phase of the facts is, that rich men, living in sumptuously fitted and furnished houses, having their costly wines iced or mulled so as to be most luxuriously in keeping with the season, be it winter or summer, whilst their tenants were drinking ditch-water; and stepping from their dressing-rooms to their bath-rooms to enjoy unlimited ablutions, whilst every drop of water used by their tenants must be first carried some distance in a pail; and, drawing the curtains closer of their well-carpeted rooms, whilst the rain is pouring down upon the beds of some of their cottagers; and passing from bed-room to dressing-room, and thence to corridor, library, breakfast-room, dining-room, billiard-room, or drawing-room, knowing that father, mother, young and grown-up children must all sleep and eat in one room in the houses they owned; or looking from their windows upon their pleasaunces, their terraces, or their spacious court-yards, and remembering the horrors to be seen from their cottagers' backdoors, could have left these matters as they were so long. Scarcely less wonderful is the fact of the scant progress some portions of the country present in evidence of nineteen centuries of civilization. Many houses are inhabited which have not more compliance with the decencies of modern life than the ruins of those dug out of the deserted camps of the ancient Britons. These had walls, doors, hearthstones, and flues. Cottages built without water supply, a second apartment, a place for food, another for fuel, and proper drainage, cannot be classed with habitations superior to those occupied by semi-civilized races. People with their wits sharpened by friction with their fellow men will hardly believe that there are numbers of solitary farm-houses, occupied by respectable farmers, without water, two or more horses having to be kept all day long, and all the year round, going to and from the nearest source. Usage blunts our perceptions of absurdities very considerably, but there are cases in which there has been no growing up in the neighbourhood of a nuisance with an unawakened sense of the want of wisdom of permitting its endurance. There can be no excuse for building seventeen new houses immediately in front of seventeen old pigsties. That we may not be supposed to be word-painting, we will make a few quotations from the reports of the guardians of the union we have mentioned, as given in the *Alnwick Mercury*:—

"*Eglingham.* — The sewage of part of the houses on the Earl of Tankerville's property, to the south of the village, is discharged into the open water-course of the turnpike-road.

Broxfield. — Neither farmhouse nor cottages weather proof; rain comes through the roofs. On the night of the 29th July bedding was wet through with rain in several of the cottages, and the floors flooded from the bad state of the roofs. No drains in the whole farmstead. Four of the cottages open on manure and ash-heaps. No privy in the place. A family of thirteen in one small cottage. In another a young man, employed at Alnwick Railway Station, suffering from vomiting, pains in the bowels (August 1st), and another ill from effects of wet, &c. Landlord, the Duke of Northumberland.

Stamford.—Row of six cottages; no privy, no drains. Piggeries and large space for manure-heaps close to one end of row, offensive to the people. Landlord, Earl of Tankerville."

We might give columns of similar shortcomings, all attested by the local guardians; and all showing that much as has been done to bring the importance of sanitary provisions before every one's eyes, down to the meanest capacity as well as up to the widest recognition, there is more to do. At the pit-village of Shilbotell, which is charmingly situated on the scalp of a rock, with a distant sea view, a little Norman church, and an ancient pele tower incorporated with the vicarage, there are sixty houses without privy or ash-pit for the use of the pitmen and their families. At the fishing village of Craster, the houses occupied by the fishers are built in the form of a hollow square, in the centre of which is the huge fish-offal and ash deposit of the little colony. At Acklington Low Park, recently enriched with one of the late Duke of Northumberland's churches, there are eight tenants, whose only supply of water is obtained from a small ditch running past the place. At Ratcliffe-terrace, a pit-village, a sewer drains into the water-course, as we recently told. At the little port of Amble the drainage is very imperfect; and Victoria-street, which, for its name's sake, should be sweet and bright, is "very dirty and ill-conditioned." In nearly all these cases the landlords have expressed their intentions of acting with the Board; thus it will be seen, that as far as it has gone, the investigation has been of use. Besides this, the Alnwick guardians have drawn up and distributed printed recommendations to landlords, to the following effect:—

1. *Sun-heat.*—That all cottages be so placed that the beams of the sun may enter the dwelling-rooms: it is equal to a fire, and keeps a house always warm and dry.

2. *Milk-houses, &c.*—That all milk-houses, larders, coal-houses, and outhouses should be placed on the north side, the sun there not being necessary. We find, in many cases, houses turned from the sun built on a level with the ground,—some dwellings having a bank of earth lying against the wall. These houses are always damp and dark, while the sun shines on the milk-houses, where, owing to the heat, neither milk, cream, nor meat can be kept.

3. *Ashpits.*—That no ashpit should be placed within 20 yards of any dwelling, and it should be covered, but well open on one side. All roofs into it should be spouted, and no water should be allowed to mix with the ashes, otherwise fœtid fermentations take place very injurious to health; and it should be well drained.

4. *Pigs.*—That no pigsty be placed within 20 yards of a dwelling-house; and, wherever placed, the drainage should be perfect, so as to keep the animal dry. The pig will feed better, and be less a nuisance.

5. *Piggeries and Ashpits.*—That, whenever practicable, the pigs and ashes should be in the adjoining gardens, as most cottages in the country have gardens.

6. *Water-closets.*—That wherever there is a good supply of water there should be a water-closet and no antique privy.

7. *Drainage.*—The drainage of the whole premises should be completed before any buildings are put down, and pipe-tiles with socket-joints used. Blaydon gullies or Stockton traps are the best traps to prevent the gases escaping.

8. *Living-rooms.*—Every cottage should have one good kitchen, 20 ft. by 15 ft., at least two sleeping-rooms above, one large and the other smaller, a cool pantry, and coal-house on the north side.

9. *Damp is one of the great evils.*—In choosing the site of a cottage, let it be elevated a little above the yards and gardens. The walls above the ground should be coated over with boiled coal tar, a cheap and sure remedy to prevent damp rising by capillary attraction. The ground-floor is best boarded, and air should be introduced under the boards to secure against dry-rot. The ground-floor should be raised at least 2 ft. above the soil outside.

10. We must not omit to say, that no cottage should be erected unless in a place near to a good supply of water, and avoid such a place as Radcliffe-terrace, where 800 people are without a drop of wholesome water to drink, and without proper drainage."

A curious incident occurred at "dirty, ill-conditioned Amble" this autumn, which shows the importance and necessity of a thorough dissemination of the laws on sanitary matters, as it seems to have occurred through a misapprehension of the regulations made to prevent the spread of cholera. A few weeks ago a French fishing-boat put into the port for a medical man. On proceding on board the doctor found one of the fishers ill with cholera, which had obtained too strong a hold upon the patient to permit of cure. The poor fellow died about twelve hours after medical assistance was obtained. Hereupon, under fear of spread of the deadly disease in the little port, and in ignorance of the law upon the matter, the Amble people did their best to prevent the landing of the body for burial. They endeavoured to make the foreign fishers understand it would be better to take the body of their deceased comrade out to sea and bury it in mid-ocean. As a deaf ear was turned to the suggestion, a pistol was fired over their heads to aid the interpretation of these sentiments. Determined, however, that their comrade should be interred, the fishers placed his remains in a small boat, and rowed up the Coquet till they came to Warkworth, where they applied to the vicar to bury him. A messenger was despatched to the nearest magistrate for an order, and this having been granted, the poor stranger was interred in the pretty churchyard at Warkworth, within sound of the rippling of the Coquet, and within bowshot of the great grey castle of the Percies.

The infirmary accommodation in the workhouses in the north does not appear to be very complete. Three large houses, as our columns have indicated, have thought about setting themselves in order. Of these Morpeth is in course of construction; Darlington has plans now under consideration; and Burnley is offering premiums for the best advice on the subject. Not too soon has Darlington stirred; for we hear of a bakehouse there which has a water-closet pipe, belonging to a sick ward above it, running down one side of it, and which frequently gets red hot, and a dead-house adjoining it on another.

FOREST CONSERVANCY IN INDIA.

DURING the last eighteen months, steps have been taken by the Indian Government to preserve the vast and valuable forests in the peninsula both from the effects of natural decay and also from the still more important injuries inflicted by the indiscriminate felling of trees, and the absence of any provision for renewing those which have been removed.

Some imperfect forms of forest conservancy have been in existence for some few years, and in 1865 the "Government Forests Act," which came into operation on the 1st of May of that year, was passed. It extends to the whole of India, and gives power to the local authorities to make certain rules, which are to have the force of law, for the preservation of trees, and for keeping clear the streams and canals passing through or coming from Government forests, and which serve for the transport of timber. Previously, however, to this, the Government of Bengal had organized a system of forest conservancy, and had appointed Dr. Anderson, superintendent of the Botanic Gardens at Calcutta, as Conservator of Forests. The first step taken by Dr. Anderson was to issue a series of questions to the commissioners of all the divisions of Bengal, requesting information as to the extent of forest tracts, the nature of the timber grown, and its value for building and other purposes; the method of transport; and whether in any of the Government forests there existed any restrictions as to the cutting of timber. Information was also asked on several other points of simply local interest. The answers to the circular were published a short time back in the *Calcutta* (*Official*) *Gazette*. They are very voluminous, and in some cases contain some valuable information. One fact appears to be abundantly clear, viz., that large forests of sâl (*Shorea robusta*) and other valuable trees have been greatly injured by a system of cultivation called

in Madras the *kumari* system, and in Eastern Bengal the *joom* system. It may be defined as the clearing of a patch of forest for cultivation by felling and burning the trees, the patch being deserted, after it has yielded one or two crops, for freshly-cleared patches. Where such a barbarous and wasteful method of cultivation prevails, it is easy to be understood that the forests have been seriously injured. The assistant commissioner of Dacca says, in his reply, "Joom cultivation is in full play, and is the greatest enemy of the timber. Tea cultivation has also cleared much of the forest." It may be urged that the forest tracts of India are so enormous that the destruction of a comparatively small portion is of no consequence, and that the natural fertility of the soil would be sufficient to replace the timber thus destroyed. It appears, however, that in many parts of Bengal the timber near the great roads or rivers is exhausted; and although immense tracts of valuable trees still exist, the cost of transporting them over the cleared portions of forest to the river or highway is too great to admit of being carried on at a profit. The Government lessees appear to be fettered with very few restrictions, except in the case of india-rubber leases, where there is generally a clause to prevent the extraction of the sap except between the 1st of November and the 30th of April in each year. Directions have also been issued in one district that the persons employed in extracting the resin from the sâl-trees should be required to do so by incisions not likely to prove injurious to the trees.

The chief difficulties in the way of preventing the waste of valuable timber appear to consist in the apathy and obstinacy of the zemindars. The superintendent of the tributary mehals, Cuttack, says that they are jealous of interference, but are also very fond of gain, and are not sufficiently advanced to appreciate the value of preserving their timber if they could sell it. The forests on the estate of the Palgunge Raja "are very valuable and are being utterly ruined." An attempt was made to obtain a lease of the forests of another of the proprietors of the Hazareebaugh district, but it fell through in consequence of the innumerable under-tenures and conflicting claims which it was found impossible to reconcile.

Dr. Anderson has also prepared a forest budget, containing a scheme for working the forests of Bengal in three divisions, each to be under the control of an assistant conservator. Great difficulty was experienced in procuring suitable men as overseers. A nursery of temperate forest-trees was established at Darjeeling (where, it may be remembered, the cultivation of the cinchona plant is carried on with so much success) in March, 1865, and is now in a thriving condition. The plants consist of pine, the valuable deodar, cypress, oak, chestnut, and others. Arrangements have been made through the Colonial Office for the supply of 20,000 seeds of mahogany from the West-India Islands for the formation of mahogany plantations in the Terai. The successful cultivation of mahogany near Titalyah, raised from seed produced in the Calcutta Botanical Gardens, proves that this most valuable timber-tree will find a suitable soil and climate in the Terai. The trees raised in the Darjeeling nursery will be planted on the surrounding hills, which, says Dr. Anderson, have, by indiscriminate felling, been stripped of the trees with which they were covered a few years ago.

We may add that the destruction of our Indian forests has several times been brought before the authorities; and, in 1825, Dr. Wallich was sent to the Upper Provinces, to inquire into and watch over the extensive forests of the empire, which were found to be undergoing most wasteful and rapid decay. His report was placed by the supreme Government with the Agricultural and Horticultural Society of India. Mr. Onslow, superintendent of the Nuggur Division, reported so far back as 1847 that the splendid teak forests mentioned by Buchanan in his "Journey through Mysore in 1800," had almost entirely disappeared. An officer at Hydrabad was in want of light-coloured wood for picture-frames, and he applied to the regimental contractor. He was surprised "to find that every third or fourth log in his great store of firewood, was most beautiful satinwood of large size! Only imagine the victuals of a whole regiment, not to say of a large community, being cooked with satinwood!" Efforts have been made from time to time by the Agricultural and Horticultural Society of India, by the offer of prizes for plantations, and in other ways, to check the reckless waste of timber, but apparently with little effect.

There is another point of immense importance connected with the destruction of forests besides the scarcity of wood which it creates. We refer to the effects on the climate. "By felling trees which cover the tops and sides of mountains," says Humboldt, "men in every climate prepare at once two calamities for future generations,—the want of fuel and the scarcity of water." The presence of forest tracts tends to mitigate the extreme heats of summer, and generally to render the climate more equable. There are cases, of course, in which the rapid march of civilization absolutely demands the destruction of forests; but, on the other hand, there are many instances in which forests may be preserved, and, by proper cultivation, made to yield a valuable and lasting supply of timber.

Much valuable information on the subject will be found in the volumes of the "Journal" and "Transactions" of the Agricultural and Horticultural Society of India, and particularly in a "Report on the Destruction of Tropical Forests," published by the British Association in their report for 1851.

An interesting account of the present state of our Indian forests, and the revenue which they produce, is contained in a "Report on the Moral and Material Progress of India," issued about six weeks ago by the India Office. This paper, which costs only a few pence, contains a mass of miscellaneous information relating to India, and is, moreover, written in a more inviting style than the majority of Government publications.

The newly-appointed conservator promises a general report on the timber trees of Bengal, when he shall have inspected the forests of Bootan, Dooars, and Assam.

BUILDERS' CLERKS' BENEVOLENT INSTITUTION.

The first public meeting of this Society, the object of which is to afford relief to the necessitous, grant pensions to the aged, and for the maintenance and education of the orphans, of builders' clerks, was held on Monday evening last, at the Bridge House Hotel, London Bridge.

The chair was taken by Mr. Alderman W. Lawrence, M.P., and there was a good attendance of gentlemen who had consented to act as trustees, committee of management, and so on.

The Chairman, in opening the business of the meeting, observed that they were assembled that evening to inaugurate an institution in the success of which all present were more or less interested. Perhaps, among all the various trades and manufactures, not only in the metropolis, but in the country generally, there was none so subject to vicissitudes as that of the builder. It was subject to seasons of great prosperity, followed by periods of great depression and adversity. It consequently behoved all who were connected with it to promote the interests of a society, the object of which was to ameliorate the condition of those who, by accident, misfortune, or illness, were no longer able to provide a livelihood for themselves and their families. In the building trade there were institutions for the builders themselves, and for their foremen, and now it was proposed to found an institution of a similar benevolent character for the builders' clerks. Although the present was not a very prosperous season for inaugurating a new enterprise, yet, when the great number of builders' clerks was considered, he had no doubt that the present Institution would be launched with such a measure of success, that when more prosperous times arrived, it would receive that degree of support which would place it among the many permanent benevolent institutions of the metropolis. Moreover, it should be remembered, in advocating the cause of the builders' clerks, they were persons who were compelled to have a special education for their position. That position was not similar to that of ordinary mercantile clerks, because the builders' clerks must be acquainted with the particular working of the builders' business. He was glad to find that the present movement had not come from without, but from the builders' clerks themselves. Similar institutions had been established for warehousemen's clerks, for commercial travellers, and even for porters; and he was glad to find that the builders' clerks had resolved not to be outdone in their determination to help themselves. Builders, as a body, were men of business, and did not waste time in making long speeches; so he would not dilate at any length upon the building trade, or its various ramifications, or the many interests connected with it. All he would say was that, although they had met to inaugurate the Society in the gloomy month of November and in the eventful year of Grace, 1866, still the attendance that evening showed that neither the time nor the season had depressed the hopes nor weakened the determination of those who were resolved to co-operate for the establishment of an institution on the broad and safe basis of self-help. He would now call upon Mr. Colls to move the first resolution.

Mr. B. Colls then submitted a resolution to the effect that the meeting hailed with pleasure the efforts made to found the Institution on a solid basis; approved the rules framed for its guidance; and pledged itself to support the same, and to invite the cordial co-operation of all who might take an interest in alleviating the condition of those who from incapacity or infirmity were unable to help themselves. This was, he thought, a resolution which ought to commend itself to all present. The great advantage of the present movement was, that it had emanated from those who were themselves most deeply interested in its success. It was a step in the direction of that self-help which was so desirable, and which deserved to be encouraged because no one was warranted in asking a benefit from others which he could by hard work or self-denial confer upon himself. Speaking as an employer, he could say that much of the builders' success depended upon the ability and honesty of the clerks in their service. In the case of ordinary workmen it might be said that there was not one out of twelve who cared whether his employer lost or gained by his contract; but, in the case of builders' clerks, it was much to their credit to say that they rarely neglected the interests of their employers. A builder's clerk would not be of any use without that special knowledge which he brought to bear on his work; and it was but right that, in case of accident, illness, or infirmity, provision should be made for his maintenance.

The resolution was seconded by Mr. W. Henshaw, who recommended an active canvass among the persons proposed to be benefited, and remarked that if this were done and if the builders' clerks were found combining for their common good, the Institution would be entitled to the support of every right-minded employer in the country.

The resolution having been carried,

The Secretary, Mr. F. T. Mullett, read a list of trustees, committee of management, officers, &c.

Mr. G. S. Pritchard then moved the election of those gentlemen according to the printed rules, and in doing so enforced the necessity of self-help, observing, that employers and the public generally would not be slow to come forward if they found the builders' clerks determined to work energetically for themselves.

Mr. M. B. Newton, in seconding the resolution, observed, that the merchants of the metropolis had always received much courtesy and attention from builders' clerks, and that the present movement had their hearty approval. It was an aphorism that "God helped those who were willing to help themselves;" and although the beginning of the Institution was comparatively small, he could see that it had the germs of life in it, and that it would attain the prosperity it deserved. He happened to know something of the working of the Warehousemen's and Commercial Travellers' societies, and he knew that by none were they so well supported as by the members of those callings themselves. He hoped, therefore, that although none who heard him would ever enjoy the benefits of the Institution, still that they would work energetically in its behalf; for it was impossible to tell when misfortune might overtake even the strongest and most prosperous amongst them.

Mr. E. Conder next moved a resolution to the effect that the warmest thanks of the members of the Institution were tendered to the architects, employers, merchants, and others of the metropolis for their kind and efficient support, for their attendance that evening, and for the able manner in which they had advocated the claims of the Society to the help and encouragement of all connected with the building trades. He observed that he was well acquainted with the position of the builder's clerk, as he had himself commenced life as one of them, and that he would do all he could for a body of men who he was persuaded would do all they could to help themselves.

The motion was seconded by Mr. Capon, and carried unanimously.

The Secretary and Treasurer then read a long list of donations and subscriptions, amounting ultimately to 456*l.*

Mr. T. Peto Ward (the founder of the Institution), who on rising was very warmly received, observed that the builders' clerks really did not know who were their friends until the present movement had been inaugurated. He was himself quite unprepared for the long list of donations and subscriptions which had just been read, as he had not ventured to hope for more than 100*l.* or 200*l.* at their first meeting. For much of the success achieved that evening they were indebted to the professional press, and he thought they would be wanting in a sense of gratitude if they did not promptly acknowledge it. Mr. Ward concluded by moving a resolution on the subject, which was seconded by Mr. H. T. Bayes, and carried *nem. con.**

The proceedings were brought to a conclusion by a cordial vote of thanks (moved by Mr. C. Fish) to Mr. Alderman Lawrence for presiding on the occasion.

Mr. Lawrence, in replying, congratulated the meeting on the successful inauguration of the Institution, as also on the fact that the building trade had now taken that position in the country which its vast importance entitled it to maintain. He was proud to have assisted at the foundation of so practical and useful a society as the "Builders' Clerks' Benevolent Institution," and he trusted that each year would witness its increasing prosperity and usefulness.

THE NEW HOUSES OF PARLIAMENT, BRISBANE, QUEENSLAND.

THE portion of the new Houses of Parliament and Public Offices at Brisbane, the metropolis of the colony of Queensland, in Australia, set apart for the Houses of Parliament are now approaching completion.

The Houses of Parliament occupy one side of a square. They will comprise a council chamber and an assembly chamber (these are on the first-floor level), each 65 ft. by 36 ft. 6 in. by a height of 31 ft., the height being attained by the chambers passing through the two upper stories, a gallery running round each chamber at the level of the second-floor, for the use of the public, for ladies, and for reporters; two libraries, one over the other and over the principal entrance for members of both houses, in the centre part of the building; a large refreshment-room and a smoking-room, with the necessary bar; kitchen (the kitchen will have a Flavel's patent cooking-range), serving-room, wine-cellar, &c., attached, this group of rooms forming a separate block of building to the rear of the chambers, in the courtyard; also several committee-rooms, rooms for the president and speaker, for the ministers, for the officers of the two houses, and for his excellency the governor on the occasions of opening and closing the sessions.

The climate of Brisbane in the summer months being hot, advantage was taken of the site, which faces the prevailing north-east seabreezes, and the chambers are placed longitudinally, end to end, with the principal staircase and one of the libraries between, so as to get as much benefit from the prevailing cool breezes as possible, each chamber having opposing windows on each floor, which are protected from the fierce rays of the sun by stone arcades on the principal front, and by wide verandahs of wood on the side overlooking the courtyard. The site is quite open, and overlooks the Botanic Garden, which, from the building, is an object of great beauty, as the laying out, which is exceedingly picturesque, is seen to great advantage, and the numerous tropical plants and trees dotted about, with a fine clump of bamboos gracefully overhanging a small sheet of water, give quite an Oriental aspect; and the Brisbane river, which at this part is about 800 ft. wide, quite encircles the tongue of land forming the Botanic Garden, the Government domain, and the site of the Houses of Parliament. Altogether, the site is beautiful, for from whatever point you look the wooded hills and the winding river enliven the scene. Government House stands nearer to the point of the same tongue of land. It may be interesting to state here, that this land was cleared and cultivated some forty years ago by prison labour, when Moreton Bay was a penal settlement; and one old building, which stands close down to the river, not far from the site of the new buildings now being described, used formerly as a commissariat store, bears the inscription "G. [crown] R. A.D. 1829," on a stone panel in a gable overlooking the river.

The new buildings are constructed of a rather coarse description of sandstone, but having one of the most exquisite tints imaginable, being of a pale soft purple, most agreeable to the eye, for it is neither glaring nor sombre; the coarseness of the stone is an obstacle to carving, but any moulding can be cut in it. The masonry is of the very best description, however, and it was not for want of men capable of carving stone that little carving has been introduced in the building; for in Melbourne and Sydney some excellent English stone-carvers have made homes for themselves, and have left traces of their handiwork on a few buildings which will be looked upon in future days with wonder. The principal floors of the building are fireproofed with Fox & Barrett's patent fireproof flooring. The roofs are to be covered with the Vieille Montagne Company's zinc, which was all prepared and fitted in London under Mr. Edmeston's superintendence previously to shipment. Water, from the Enoggera Waterworks, will be laid on throughout the building.

The works have been carried out by the Government, under the direction of Mr. Charles Tiffin, the "colonial architect," who designed the building, having foremen of the different branches of the building trade acting under him. The estimated cost of the present instalment of the building is 50,000*l.*, not inclusive of gas and other internal fittings.

Brisbane.

* The Association may be said to have grown out of letters in our own pages.

IMPEDING LIGHT.

VICE-CHANCELLOR STUART has given judgment in the case of Wavell *v.* Watson. He said the plaintiff had clearly established a right as against the defendant to a mandatory injunction. The plaintiff's case was that within 11 ft. 10 in. of the front of his house there had been erected a wall of a new building which had now reached about double the height of the building that previously stood there. It was said, on behalf of the defendant, that in January last the plaintiff was well aware that the defendant was bound by covenant to erect this building; that the defendant consulted the plaintiff as his professional adviser upon certain matters; that the plans and elevations were then produced, and that the plaintiff must then have known that the proposed building would interfere with his right to light and air. None of these circumstances went far enough to show a case of acquiescence which could bind the plaintiff. The subject matter, as to which the plaintiff was consulted, had no reference to the height of the building. His attention was not particularly directed to the manner in which his right would be interfered with. In order to make out a case of acquiescence, the evidence must be perfectly clear, and unequivocally refer to the matter which was said to be acquiesced in. The plaintiff filed his bill on the 27th of September, and the defendant was warned that he proceeded at his peril. The defendant did proceed at his peril, and unless the Court would allow the plaintiff's right to be permanently injured and destroyed, it was quite clear that the defendant must remove the obstruction which he had erected during the progress of this litigation. There must be, not the usual injunction, but a mandatory injunction, requiring the defendant to remove the obstruction complained of, unless the parties should make some arrangement on the subject. Mr. Malins and Mr. Martineau were for the plaintiff, and Mr. Greene and Mr. Karslake for the defendant.

IRON KIOSK FOR INDIA.

WE give this week the remaining engravings of the Iron Kiosk for India, the exterior elevation of which appeared in the *Builder* of the 10th ult. This structure forms, perhaps, the most remarkable specimen of ornamental ironwork yet erected. The building is 80 ft. long by 40 ft. wide, and is composed entirely of cast-iron, of which there are about 180 tons. The columns are double, and are bolted upon bed plates, which extend 10 ft. into the building, and thus present sufficient resistance to the strain transmitted from the roof through the columns.

The roof ribs spring diagonally from each column, and by their intersection divide the entire roof into equal squares. Owing to this arrangement of the ribs, the hipped ends of the building have the same appearance as the ordinary part of the roof, whereas in most cases they are of irregular construction. The section of the roof is of an arched form, without any ties. The constructive detail shows an entirely novel application of cast iron, the intersecting ribs being dovetailed together in an ingenious manner. The open arabesque work at the sides, as seen in the engraving, shows what may be done in cast iron when well executed.

The load on the roof acting on the structure as if it were concentrated at the springing of the upper ribs, would tend to bend this point inwards, raising the crown at the same time under the influence of transverse strain, and turning the column round its base. To prevent this, either of the three connexions, viz., at the crown, at the springing of the upper ribs, or the connexion of the base of the column with its foundation, would require to be strengthened to resist this tendency. In order to avoid affecting the light appearance of the visible parts of the structure, the base of the column beneath the floor level was chosen, which, by means of a number of 1¼-in. bolts, is strongly secured to a girder of 10 ft. length, forming at the same time a foundation plate, and is thus rendered immoveable. In consequence of this arrangement, the springing of the upper ribs and the crown cannot give way in the manner described; and while the ribs can be regarded as being rigid near the eaves, the only strain acting on any part of the structure of the roof will be shearing strain, transverse strain being only applied to the girders.

The kiosk stands at present on land in the Exhibition Road, South Kensington, adjoining the Horticultural Gardens, and is well worth a visit from those interested in constructive ironwork.

Messrs. Trollope & Sons, of Halkin-street West, are the contractors for the building. The designs were prepared by Mr. Owen Jones; Messrs. Ordish & Le Feuvre acting as engineers.

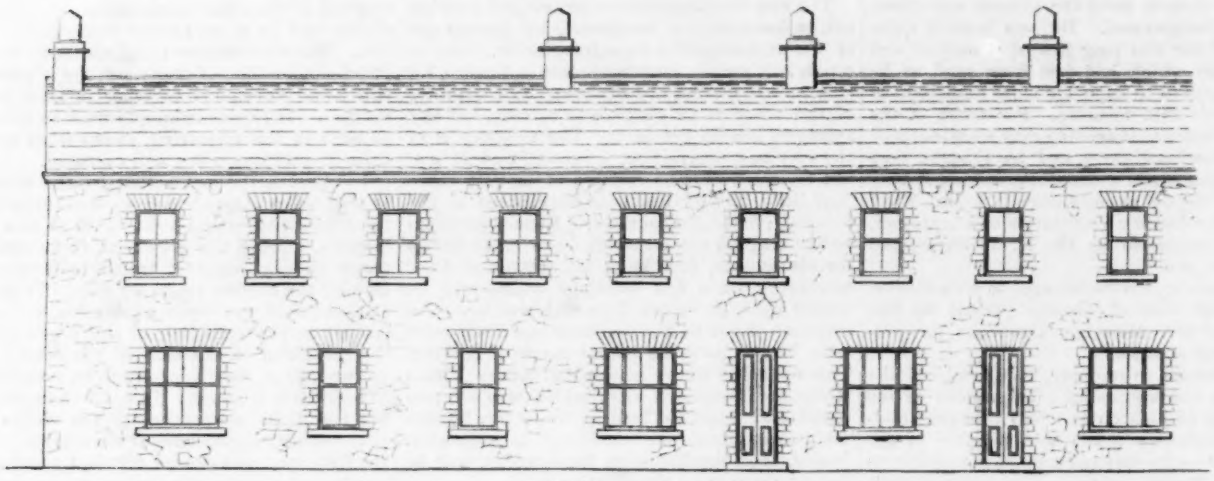
As a specimen of ironwork this structure reflects much credit upon Messrs. Handyside & Co., of Derby, who made and erected the ironwork for the contractors.

WORKMEN'S COTTAGES, LLANDAFF, NEAR CARDIFF, SOUTH WALES.

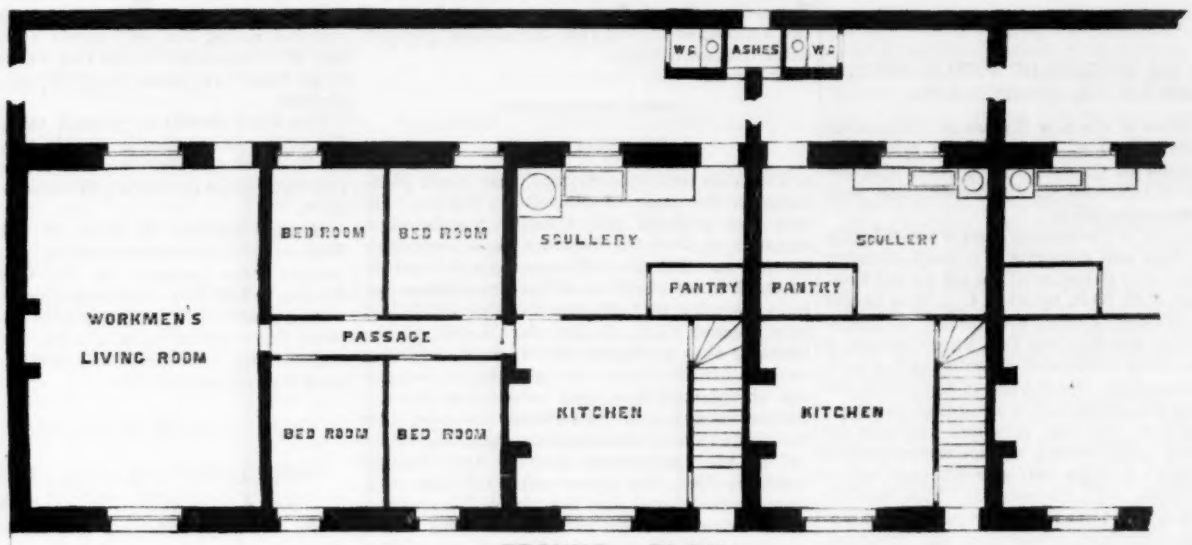
WE give plan, elevation, and section of these cottages, which have been built by Messrs. C. de Bergue & Co., for their men at Llandaff. Such cottages, can be erected, complete, for 105*l.*, if attached, as shown. The idea is to provide in the single houses accommodation for two male lodgers in a double bedroom, 14 ft. 6 in. by 9 ft., and containing a fireplace in case of illness; also two other bedrooms for the family. There should be three. We give the plan of the lodging-house, which occupies the space of three single houses. It contains twelve bed-rooms for lodgers, and three for the family, with a fireplace in one of them in case of illness. On the ground-floor a spacious sitting-room is provided for the exclusive use of the lodgers, and separated from the hearing of the family by two intervening bedrooms and double doors. Each lodger has his own bedroom opening into the centre passage, he and the hostess only having access to it by key. The kitchens are provided with close Cheltenham ranges, suited in size to the requirements of each house, a coal closet, a pantry, &c. The back kitchen or scullery, is filled up with washing boiler, sink stone, drains, &c. Soft-water is all saved and collected from roofs into cask in back-yard, from which a cock opens over sink-stone. The "closet" accommodation seems scarcely sufficient.

The rents of either single or lodging-houses will readily be cleared by the lodgers kept; and if desirable, as it may prove in a retired country place, a lodging-house may be readily converted into a shop or co-operative store for the workmen exclusively, and in which they might feel disposed to invest. The cottages have been built of a red and rather hard conglomerate stone, which is found in this neighbourhood. Mr. Thomas Evans, of Cardiff, was the contractor and builder of the cottages. Mr. Benjamin Finch, the manager, designed them.

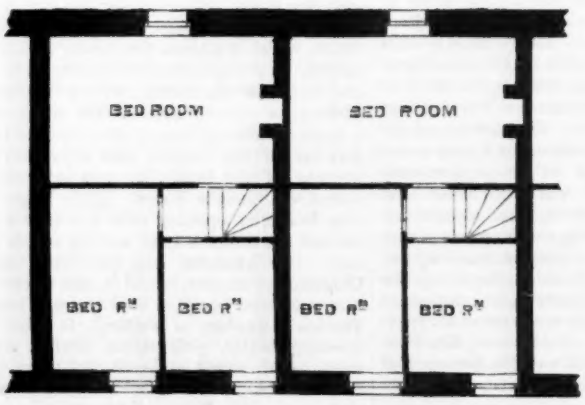
WORKMEN'S COTTAGES AT LLANDAFF, NEAR CARDIFF.



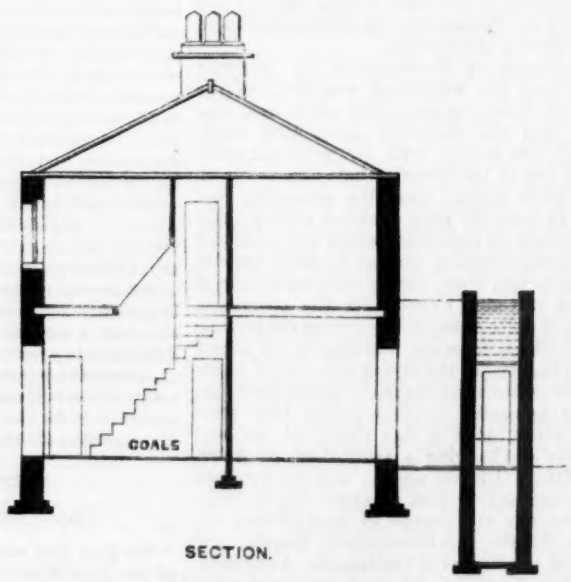
FRONT ELEVATION



GROUND PLAN



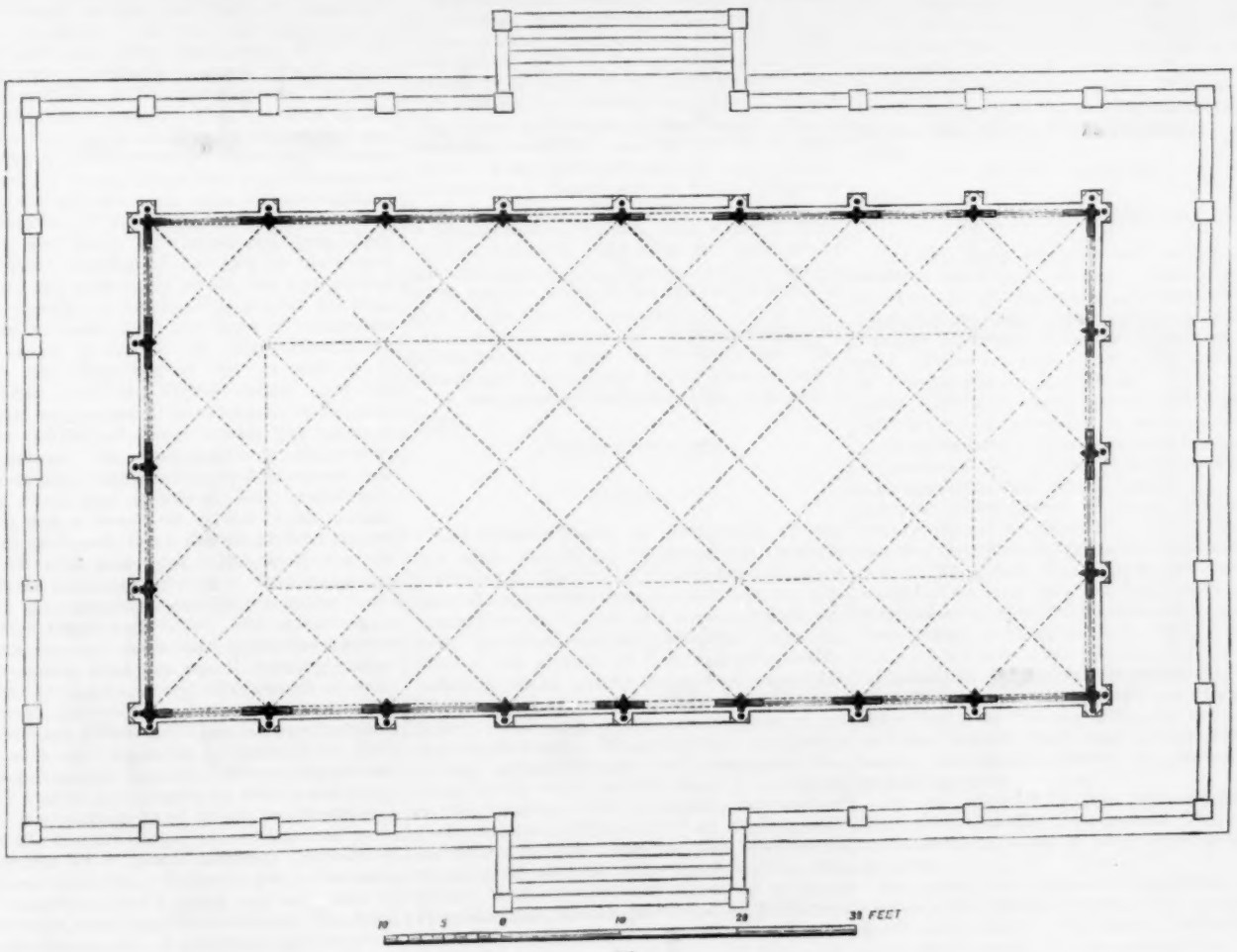
UPPER PLAN OF SINGLE HOUSES.



SECTION.

SCALE OF FEET

INTERIOR VIEW OF IRON KIOSK.



Plan.

ART UNIVERSAL AND PRACTICAL.

CAMBRIDGE SCHOOL OF ART.

AT the distribution of prizes on the 21st ult., the Master of Trinity presiding,

The Archdeacon of Ely, in making a short statement of the progress of the school, said he supposed all would remember that it began in 1859. Through the illness of the master, Mr. Wood, by a sad accident on the railway some time ago, the school had declined a little; but it was now rising again under the able teaching of the present deputy-master, Mr. Wigzell. It must be remembered that, not only was their central school promising, and their branch school at Royston, but they were instructing several hundreds of poor children in the old schools of the town. It was still a matter of regret that drawing did not form a regular part of instruction in the Perse school, though it was only fair to add that several of its students attended the School of Art, and showed much power. About 700 pupils in all were now receiving instruction in drawing, and thus their school was doing much for the material, social, and even religious improvement of the town and University.

Mr. Beresford Hope said he thought it best in an address on such an occasion that a speaker should confine himself to one point, and the point he would choose would be that art is universal and that it is practical; that it is not something to be put on and off like a bonnet or a gown,—not something distinct from the duties, pleasures, and occupations of life; but a method of proportion by which those duties, occupations, and pleasures, might be measured, modelled, refined, and polished up; a something by which they might be made what they could not have been if there had not existed the idea of art in the world. Art was an all-pervading principle. It was morality made evident to the eye; it was that which taught the eye to appreciate the beautiful, that taught it moderation, fulness without extravagance; it was that which, in its mental aspect, was known as morals, in its intellectual aspect as ability, and which, for want of a better name, was called art, when applied to externals. When they were brought here to look at these pictures of columns, of book-covers, of apples, of grapes, and of waterfalls, it was not meant that they should infer that these were the be-all and end-all of those who had produced them; it was merely an accomplishment which they had acquired in very much the same manner as they had learnt to make pothooks at school. And why did they learn to make pothooks, when they might have been much more pleasurably engaged in playing about in the sunshine or in smearing their dear little lips with blackberries? Why, but that by this means they were learning to be masters and mistresses of all power for their lives to come; because it taught them how to put themselves in communication with their fellow creatures, however far off they might be; how to learn their wants and fears, and hopes and joys. That was their meaning of learning to make pothooks; and this study of art was in the same way merely an excellent means to an end; it was to teach them the laws of proportion and beauty in nature. Mr. Hope showed how there was dissection in art as well as in medicine; that the student would soon find himself embarrassed if he attempted to depict an object and did not adhere to what was known as the outlines. By practice such as this he soon learned what was primitive and important, and then what was additional and embroidery. There was a form and outline in all existing things, and upon these the art student learned to look with new eyes. But what was the practical advantage of it all? How was a man wiser, more sensible, more likely to get on in the world in consequence of it? The answer was a simple one: the same that might be replied to the question, what use was it learning mathematics, or classics, or any other branch of study which led the mind to reflect and to reason. The method was different, but the end was the same; and, as it was impossible to make all the world what was called "bookish," yet very desirable to teach everybody to read; so, though everybody could not be made great artists, yet it was very desirable that art should become more and more recognised as a great necessary element of universal education. To teach people harmony and proportion was a great requisite, and its advantages, when applied to common life, would soon be discovered. It might be applied to the commonest and most familiar affairs of life. Take the smith making a hinge, or the carpenter making a chair. The smith, with a knowledge of art, would impart forms of beauty and proportion to that hinge which would make it a delight to those who looked upon it; and, he would be bound to say, at the same time every bit as efficient to hold the door or the cupboard as the ugliest production of the most rustic Vulcan that had his abode in the most deserted village. And the carpenter who had learned to turn with elegance the leg of a chair would make that chair no more likely to break down than the workmanship of a fellow who went on doing his work when he hated it, and simply for the sake of the money it brought him. Art made people love what they did, because it made it a joy to the heart and a joy to the eye. In reference to the domestic view of the case, Mr. Hope expatiated on the great advantage possessed by a lady who had a knowledge of art, in suitably choosing the colours of her dresses and her ribbons—how much better would be the choice of such a lady than of one who went blind-folded to the syren blandishments of the itinerant French milliner! He ventured to assert that the barrier existing between the world of art and the great world of practical life had no real existence, and that it would have none until the sun, and the moon, and the earth were annihilated, until the human body was annihilated, and until all the perceptions of an intelligent being and all the beauties in the world had been reduced to chaos and utter darkness.

Mr. F. S. Powell also addressed the meeting, and in the course of his observations, mentioned that a young lady, educated in a Lambeth School of Art, had been employed by the Bradford manufacturers to make designs, and had thus been enabled to help her parents, and contribute to the comforts at home; and in Cambridge there was no small amount of ingenuity undeveloped and not enjoyed, which might be brought to bear in a very similar manner. We must look for the extension of art-education within our homes; they could not refer to it in the same degree as regarded the outside, for the school of architects outside could not be said to keep pace with the school of decorators within.

NEW CHURCH, AUCKLAND, NEW ZEALAND.

THE rapidly-increasing population of the town of Auckland requiring an extension of church accommodation, the inhabitants of the Ponsonby-road district resolved on the erection of a new church, to be built by voluntary contributions. The site for the building was given by Mr. S. Toms; and the design of Mr. W. Pritchard, of Auckland, architect, was selected by the committee: Messrs. Thompson & Co. are the builders. The church is constructed of Kauri Pine, on a brick foundation. The plan is cruciform: it comprises nave with aisles, terminating by transepts and chancel. The tower and spire are at the north-west angle. The length of the nave is 80 ft., and the width 30 ft.; the height from the floor of the nave to the ridge of roof is 40 ft. The church is entered by doorways under the tower, and at a porch on the south side. The church will have sittings for 450 persons, and is to be completed by December, 1866, at a cost of 1,123*l*.

PARIS.

THE Imperial Society of Antiquaries visited, last week, the Hôtel de Carnavalet, recently purchased by the City of Paris to form therein a new collection of the antiquities of ancient Paris. Though late in the field of "memorial preservation," there are many structures now under the sway of the pickaxe, of high archæological interest, if not of artistic merit, that may either be photographed, or at least copied in some way so as to hand down to posterity the state of art at a certain period. The collection of antiquities is very interesting and well arranged. The library of the Hôtel de Ville is also to be lodged in this building; it is principally composed of works concerning Paris and of an Anglo-American collection, very complete, that attracts the attention of visitors. The rarest work in this library is the illuminated missal of Jacques-Juvenal of the Ursins, purchased by M. Firmin Didot, for the municipality, at the sale of Prince Soltikoff's collection for 1,400*l*. Of folio size, this MS. is of extraordinary splendour, and is a veritable encyclopædia of the monuments, costumes, arms, and instruments of the period.

The Lyons Railway Company have built an enormous goods station in Paris. It is finished, and is to be opened shortly. The most extensive accommodation is established by the vast subterranean depôts under the Nicolai goods station. As to the new building, and perhaps the largest in all France, the subterranean portion is composed of six parallel galleries, 984 ft. long, and intersected by transversal thoroughfares; the massive buttresses, which are disposed right and left of the building, to resist the final thrust of the arches, have a development of 2,297 ft. From the upper story to the underground one the goods will pass, and *vice versâ*, by means of a system of double lifts. The wagon to be discharged is placed on one of the platforms of the lift, and is secured. The engineer, on the lower stage, then lowers the loaded wagon, while the empty one ascends by the opposite lift. Loaded trucks are hoisted by a hydraulic press, worked by a steam-engine. To furnish water for all this, a well has been sunk in the middle of the vaulted storehouse, and carried down to a very great depth. The piers are very massive, and much difficulty was experienced in finding a good footing, the soil being of a loose, treacherous nature, and full of water, as might be expected from its proximity to the river. Their average depth is about 33 ft. from the surface of the lower story. Two sloping carriageways, of easy gradient, have been formed, for the passage of carts, &c., from the streets to the underground storehouses. It is needless to add that the whole is well lighted with gas. The station is well worthy of a visit.

Traction engines have been put to a new use lately in Paris, having been employed to haul boats on canals. A few days ago one of them hauled two strong barges all the way from Compiègne to Paris, and followed perfectly all the bends of the road. The journey was effected in one-third the time usually occupied by horse-traction.

The weir and lock of Suresnes, near Paris, are in a forward state, and it is expected that they will be completed in four or five months, so that by the time of the Exhibition of 1867, the depth of water will be increased at the Pont d'Jena, and thus the navigation will be improved.

The grand cascade of the Buttes Chaumont is ready, and the water laid on. As soon as the lake is quite ready, all that is necessary will be to open an enormous cock in order that it may play. It will throw the cascades of Saint Cloud and Versailles quite in the shade. Thus has a wilderness, with quarry pits some 50 ft. deep, been levelled and turned into a park. The view from the roadside, which forms a terrace at the top, is immense. Money will do anything and everything.

PARIS EXHIBITION, 1867.

ALL the heavy ironwork and roofing of the building have been completed, and the light framing and glazing are being proceeded with. The piers are being painted the usual colour of Parisian ironwork, chocolate picked out with gold. The ceilings are straw yellow, with fillets of Sienna colour; the exterior arches of the grand gallery are also painted straw yellow, with brown lattice-work. It has been resolved to unite the bank of the Seine with the gardens by means of two tunnels, so that visitors quitting the boats may enter directly on to the grounds. The portion of the park near the military school is behind hand, compared with the rest, as regards laying out and planting; but now all the efforts of the gardeners are concentrated on that spot, and some hundreds of magnificent shrubs, including superb magnolias from Angers, are being planted. This portion of the park is reserved for Belgium, Holland, England, Austria, Switzerland, Germany, &c. In the French department carpenters are already at work fitting up the stalls, &c., for exhibitors; and the English department is also being got ready. The pavements are being laid of compressed concrete.

On the verge of the Quai d'Orsay, near the Pont d'Jena, is the International Club. It is three stories high, and is being roofed in at this moment.

The model and cheap hotel bordering on the avenue Labourdonnais appears to be finished inside and outside. The several boiler-houses and chimney-stalks have been completed.

On the rock in the lake at the foot of the

church is being raised the iron lighthouse. The church will contain specimens of every species of ecclesiastical architecture and ornament, and is already roofed in. Bales of goods from Sweden have arrived in a Swedish vessel, at Havre, which will mount the Seine as far as Paris. The glass case and all the fittings for the objects exhibited by that country have been manufactured at Stockholm, as also the chalets that are to be erected in the park. Seven Swedish workmen accompany the works, which will be placed in lighters, and towed up by the Swede steamer as far as the Pont d'Jena.

The constructions for the nautical exhibition are being erected on the bank of the Seine above and below the Pont d'Jena. Here also, for the first time in the annals of Exhibitions, marine-engines will be exhibited in movement.

The Egyptian palace is completed as far as the exterior is concerned, and the small retiring pavilion and entrance saloon is completed. The roof is terminated. A few days ago some of the Egyptian objects arrived, and with them M. Ferdinand Lesseps on the part of the Pacha. He returns to Egypt immediately.

NEW NOTIONS FOR THE SUPPLY OF STAINED GLASS WINDOWS AND STATUES TO OUR CHURCHES.

The excellent editor of the *Bristol Times*, basing his idea upon a paragraph in the *Builder* as to wedding windows, and on some remarks by Mr. Ruskin as to subjects for portrait carving and painting, suggests, in a humorous article in his paper, that a never-ending source of stained-glass windows and church carvings may be obtained by the working of these two donative engines, connubial happiness and self-esteem. With a special eye to the new nave of Bristol Cathedral, he thus urges his point:—"If an advertisement were placed in the pages of the *Bristol Times and Mirror*, announcing situations to be let on the outside of the new nave, position to be paid for according to its relationship to what painters call the line or level of vision, I believe that in three months we should have more Bristolians bidding for petrified immorality than the Chapter could find space for. The exterior structure would soon be a Walhalla of our principal or at least most prominent citizens. The aldermen, those 'benched buffers,' as they have been called,—what a harvest the Chapter would have out of them! What a splendid row of what the architects call masks they would make! The sculptor would have as much pleasure in cutting *them* out in Caen stone as *they* would in cutting into a haunch of fat buck venison. And then there are the town councillors and private citizens. Everybody would be rushing for a chance of immortality; and ill as I can afford it myself, with a small wife and a large family, I think I could almost pledge my Sunday coat and sell my father's old silver watch for the most obscure place in moulding or mullion."

THE RIVERS COMMISSION AT BRADFORD.

Mr. H. W. Ripley, the president of the Bradford Chamber of Commerce, among others, has been examined at considerable length by the Rivers Commission. He said that it was his opinion that in any legislation for the prevention of the pollution of the rivers great consideration should be given to the probable fetter or cost upon English manufactures. The number of pieces which passed through the merchants' hands in the worsted district he estimated at between six and seven millions annually. The average value of each of these pieces would be about 50s., and the entire value of the goods 17,000,000*l*. or 18,000,000*l*. There was also an export trade in yarns amounting to between 5,000,000*l*. and 6,000,000*l*., and there was a trade with Scotland, Norwich, Manchester, and other parts, amounting, possibly, to 3,000,000*l*., making the value of the trade of the district in textile fabrics and worsted goods about 25,000,000*l*. per annum. Water was used in the trade for scouring wool, and for condensing purposes connected with steam-engines, and the rivers pollution question was therefore intimately connected with the turning over of the capital he had mentioned, especially as regarded the dyers of the district. He believed there would be the greatest willingness on the part of the parties engaged in the trade to listen to any suggestions, and to do all that lay in their power to abate the pollution, but if they were to be interfered with in any injurious manner they would protest. The interests and the capital involved in the trade were rapidly growing in importance and value. During the period from 1851 to 1861 great advances were made in two processes of manufacture. Wool-combing by hand was, during that time and afterwards, changed to a process which was conducted by machinery, enabling six or eight men to do the work of 100. By this means the labour of many thousands of hands was saved. During that period also the power-loom underwent a rapid and steady improvement. He was convinced that it was not feasible to use the refuse of dye-works for agricultural purposes. The best mode of getting rid of it was to burn it, and this had been done successfully at his works. He estimated that from 15,000 to 20,000 tons of such insoluable matter were annually passed out of the dye-works in the district. In reply to questions as to the weight of the raw material used in the local trade, Mr. Ripley said that in the manufacture of the 6,000,000 or 7,000,000 stuff pieces per annum to which he had referred about 42,000,000 lb. of wool were used. The export yarn trade consumed from 35,000,000 lb. to 40,000,000 lb.; and the quantity used in the trade of Scotland, Norwich, Manchester, and other places, might be guessed at 25,000,000 lb. In round numbers, the total consumption of wool might be stated at 100,000,000 lb. to 110,000,000 lb., which at 2s. per lb. would give 11,000,000*l*. as the value of the material. The great proportion of this quantity was British wool. The weight of wool annually produced in England was 150,000,000 to 160,000,000 lb. The weight imported in 1864 was 238,000,000 lb., of which 56,000,000 lb. were re-exported. The quantity of wool kept for home consumption in 1844 was 64,000,000 lb.; in 1854, 82,000,000 lb.; and in 1864, 182,000,000 lb. The exports from the district were in 1844, 9,000,000*l*., and in 1864, 24,000,000*l*. Wonderful figures.

THE IMPROVEMENT OF THE DWELLINGS OF THE POOR.

It may interest many readers of the *Builder* to be informed that this subject is to be brought before the Institute of Architects at the next meeting (Dec. 3), by Professor Kerr, with a view to its careful consideration by that society. Much as this important social problem has been already debated, there is little fear of further discussion proving to be in vain; and especially will it be of service to the good cause if this opportunity should be properly accepted for bringing effectively to bear upon it that professional investigation which the Institute can best command. We understand that the point at which it is proposed to take up the subject is that to which we have referred on several occasions. After all that has been done in providing dwellings at a rental of 5s. or 6s. a week, there is a great mass of the lower classes who cannot pay such a rental; and what can be done for them is a problem yet to be solved. We shall be glad to hear what the Institute of Architects can offer towards its solution; and we cheerfully give publicity to the notice of the intended lecture, because no doubt the council will welcome the attendance of friends of the cause.

THE ARCHITECTURAL ASSOCIATION.

The ordinary meeting of members was held at the House, in Conduit-street, on Friday evening (the 23rd ult.), the president, Mr. R. W. Edis, in the chair.

The following gentlemen were elected members of the Association:—Messrs. W. Backbourne, Emile Brandaw, Jas. Winter, Piercy, Hart, Gilling, Walter, Taylor, Foster, Lewis Solomon, Dale, W. Lewis Spiers, and Percy Okeden.

After a short discussion, it was agreed that Rule 17, providing that the registrar should keep a list of the names of assistants requiring engagements, and of architects making application for assistants, should be so altered that for the future assistants using the register should pay a fee of 1s., and architects 2s. 6d.

Mr. J. D. Mathews (hon. sec.) then read the report of the committee on the operations of the Association during the year 1865-6. It stated *inter alia*, that seventy-eight new members had been enrolled, and that twenty-three had resigned, making a total additional strength of fifty-five members. The Association had not only got entirely out of debt during the year, but the committee had the satisfaction of reporting that they had a substantial balance in hand. The compulsory fee for the use of the library had been abolished; but members were invited to make donations, either of books or of money, so as to keep up its efficiency. The committee regretted that the voluntary examination class had ceased to exist, and urged the importance of reviving it. It was, they thought, highly satisfactory that, of the four gentlemen who passed the examination by the Institute in January last, three were members of the Association.

The Chairman, in moving the adoption of the report, referred to the desirability of increasing the library, which, he said, was the only free lending library of the class in the metropolis. With regard to the voluntary examination class, he shared in the regret expressed by the committee at its abandonment, or, perhaps he should say, suspension. He regarded such a class in connexion with the Association as extremely valuable, because it brought young men together and afforded them an opportunity of learning many things which they might not so readily be able to acquire without its assistance. As a member of the Institute, it did not become him, perhaps, to take exception to the policy adopted by its governing body; but he could not forbear saying that, in his opinion, it was to be regretted that the Institute should have failed to carry out those suggestions on the subject of examination which it had itself invited. He hoped, however, that when the examination was put upon a better footing, it would eventually become compulsory, so as to prevent the introduction into the profession of those ignorant pretenders to science and art who at present brought so much discredit upon it. The class for figure drawing ought, he thought, to be better supported, as there were but twenty-two subscribers out of a body of 350 members. How, he asked, could an architect design a building for fresco or sculpture who knew nothing of the principles of the human figure? Moreover, a knowledge upon this subject was desirable, even with the view of giving a little animation to their sketches; for nothing could be more incongruous than the dilapidated specimens of humanity which were often seen in the foreground of otherwise successful sketches.

A member, referring to the remarks of the chairman on the necessity of compulsory examinations, called attention to a placard stating that Messrs. —— had removed to new and commodious premises, where they were prepared to carry on the business of architects, surveyors, land agents, auctioneers, builders, and undertakers, and that all kinds of business would be transacted on commission, &c.

Mr. L. C. Riddett brought up the report of the library committee.

Mr. E. B. Ferrey submitted the report from the class of design, which stated that the total number of designs submitted during the session was 185.

Mr. E. J. Tarver read the report from the figure-drawing class, which stated that its progress had been satisfactory, and that the expenses had been under the estimate made when it was first established.

Mr. L. W. Ridge inquired whether any steps had been taken by the Institute with reference to the formation of a school of art in connexion with architecture as suggested by Mr. Gilbert Scott at one of the meetings of the Association.

The Chairman said he believed that the Institute had not yet moved in the matter.

Mr. Tarver suggested, in reference to the recuperation of the voluntary examination class, that the better course would be to agree upon a subject, and to draw up questions one evening to be discussed the next; and that as they were all students, all members of the class should be deemed to be upon terms of perfect equality.

Mr. Ridge approved of the suggestion, but observed that as no names had yet been given in, it would be impossible to start the class. If the class were once formed, the suggestion of Mr. Tarver could be carried out.

Mr. R. P. Spiers thought the idea a good one, as it would enable the class to commence the business of the evening at once.

THE CRUMLIN VIADUCT.

It will be remembered that when the insecurity of the Crumlin Viaduct was rumoured, the Board of Trade in the latter part of last year sent Captain Tyler, one of the inspectors, who examined and tested the viaduct. Certain alterations which had to some extent been previously contemplated, and portions commenced, by the company's engineer, Mr. W. G. Owen, were settled upon to be carried into effect. These alterations, we learnt, were considered necessary, first, because decay of the timber flooring with which the iron superstructure had been covered was progressing rapidly; secondly, because the railway company's engines and rolling stock are much heavier than those in use fifteen years ago when the viaduct was designed. A writer, of the neighbourhood, gives us some particulars, the result of a recent visit.

The whole of the timber flooring, which was 6 in. thick, has now been removed and substituted by wrought-iron transverse girders each 12 in. in depth, about 27 ft. long, placed at a distance of about 8 ft. apart, with rail beams of the same depth between, and light longitudinal lattice girders, forming a [facia connecting their ends, the whole being covered with stout wrought-

iron plates all riveted together, forming a continuous sheet-iron floor, which is fireproof, and gives great lateral stiffness to the superstructure.

The distribution of weight upon the main girders, we also found, had been altered by placing the lines of rails more towards the centre of the viaduct, thereby removing a portion of the weight from the outer girders, and bringing it to bear more upon the central girders, which were strengthened by the addition of extra material in them, which had been so arranged as to equalise the strain so that the viaduct originally designed for a load of one ton per foot run of rolling load, was now quite safe with a load of one ton and a half per foot run; the strain upon the iron with the greater load being within the limits required by the Board of Trade. Some of the 3-in. diameter bolts which connect the diagonals in the main girders were found to have slightly worn away the thin bearing surfaces of the diagonals, which at some parts are ¼-in. thick. This was remedied by introducing at all these parts, gusset plates of a triangular form riveted to them, and thereby increasing the bearing surfaces and taking the strain off these bolts. The effect of these alterations was to reduce the deflection of the girders, which was formerly 1¼ in., to about ⅜ of an inch. About 1,000 tons of iron have been used in these alterations.

The difficult nature of the work we at once comprehended, in learning that the timber floor, which formed the backbone, as it may be termed, of the superstructure, and upon which the lateral stability of the whole depended, had to be cut through the centre, from end to end of the viaduct, in order to make one line complete before the other was touched, which, with passing trains and hardly room for workmen to stand, at a height of 200 ft. from the valley below, and with having to drill by hand all the holes in the main girders, rendered the work hazardous and costly. The arrangements were so complete that, although about 200 men were employed upon it, not a single accident has happened to any of them; and the first half of the work was done fourteen days before the specified time, and the whole will be completed several weeks before the time stipulated for in the contract. The work has been carried out by the Messrs. Kennard, Brothers, under the direction of their manager, Mr. H. N. Maynard, without the least interruption of the heavy traffic of the line.

Our readers may perhaps pardon our prolixity on the subject, when they reflect on the restoration of the fullest confidence in the stability and security of this beautiful structure, which must follow on the publication of these authentic details. We have previously said, the viaduct was designed by Mr. Thomas William Kennard, who is now engineer-in-chief to the Atlantic and Great Western of Canada Railway, and resides in America. The length of the viaduct is 1,500 ft., exclusive of masonry abutments, and height 200 ft., and consists of ten spans of 150 ft. each, of Warren girders, four girders in each span, supported on piers, consisting of hollow cast-iron columns, 12 in. external diameter, fourteen of these forming a cluster arranged in the form of an irregular hexagon, with base 30 ft. by 60 ft., and tapering to the top, where it is 26 ft. by 10 ft. The improvements are rapidly approaching completion.

ACCESS TO LONDON WAREHOUSES.

OBSERVING in the *Builder*, lately, an illustration, with description, of "A Warehouse in Upper Thames-street," I send a few remarks of general application to similar structures.

The adoption of an outside hoist, whereby goods are lifted from drays, &c., standing in the street, and thence suspended *over the public footpath* whilst being lifted into the upper floors, seems to me a practice which is fraught with much inconvenience and danger, and which ought to be abandoned in all new structures.

A recess should be formed, so that the vehicles by which goods are delivered from or received into warehouses could stand *within the line of building frontage*, and perfectly clear of the footpath; in this recess all loading and unloading could be carried on with convenience and safety. This method is now largely adopted in Manchester and other places; and seeing the present very crowded state of London thoroughfares, and the prospective increase of traffic, especially in the commercial quarters, the system of outside loading and unloading ought to be put an end to. I am quite aware of the immense value of the ground, and the inducement there is to utilize every square foot of space, yet at the same time the traffic requirements and the public safety alike demand consideration. Outside hoisting over the footpaths in crowded thoroughfares must at once be admitted to be very inconvenient and dangerous, and the continuance of it in new erections is not in accordance with the spirit of the times: it ought to be prevented by law; and, besides this, all *existing* hoists over footpaths ought to be provided with a safety cage or apparatus, to prevent the descent of any article of weight upon the passers-by. Such an appliance is quite necessary; and I have made rough sketches of a mode which would be practicable, and positively prevent the descent of a load, although it might at any point of ascent or descent break away from its sustaining rope or chain.

JOSEPH BRIERLEY, C.E.

DEATH AND RAINFALL.

SIR,—I am extremely vexed to find that in my letter I copied from a wrong paper in giving the percentage of rainfall and death-rate. I hardly know how to plead for your pardon, but feel assured that if you were acquainted with the circumstances under which I carry on my investigation, you would kindly grant it.

I hope I shall be in time for a correction of the statement, which I now give. C. A. ROWELL.

	Rain per cent. in excess of average.	Death-rate per cent. below the average.
1848	20·5	4·8
1852	34·9	8·2
1860	15·7	5·8
	Rain per cent. below the average.	**Death-rate per cent. above average.**
1851	16·3	9·8
1854	32·6	24·8
1884	18·2	8·6

1858 rain-fall and death-rate both below the average.

Rain ..... 16·6 Death-rate ..... 10·3

The last four quarters, *i.e.*, September 1865 to 1866, rain in excess of average, 30·9 per cent. Death-rate below the average, 15·5 per cent.

DAMPNESS AND HEALTH.

SIR,—Mr. Rowell's figures are no evidence of the superior healthiness of rainy seasons over dry ones. No one supposes that to breathe a damp atmosphere is attended with an immediate, or even always with a speedy, fatal result. But the foundation may be so laid of the disease which will cause death later, perhaps in one of the dry years cited by Mr. Rowell. E. B.

Oxford.

THE SYSTEM OF DRAINAGE IN USE AT WEST WORTHING.

SIR,—My attention has just been drawn to an insertion in your journal of the 17th ult. under the above heading, and signed "Charles E. Austen," in which the writer claims the system of drainage adopted at West Worthing as his own. As this is not the fact, I am sure you will give the same publicity to the following facts, as you have given to Mr. Austen's inaccurate observations.

Mr. G. A. Dean, of Lancaster-place, Strand, London, whose able works upon drainage have been for many years before the public (and reviewed in the *Builder*), is the author of the system of drainage in operation at West Worthing.

Mr. C. A. Elliott, of Broadwater, and Mr. Dean, about three years since, sold the West Worthing estate (extending over upwards of 300 acres) to the Keene and West Worthing Companies; and, on completion of the purchase, Mr. Dean became their architect and surveyor. As such he has laid out the estate for building purposes, has designed and constructed the roads, drainage sewers, sea defences, buildings, and other works carried out upon the property. He has constructed the best and cheapest sea defences along the south coast, and behind them, formed out of a shifting boulder beach, an unrivalled esplanade; and his system of sewerage has been pronounced by a high authority to be a most efficient one. It would, therefore, be unfair to deprive Mr. Dean of his fairly earned fame, and which I (as a person deeply interested in the prosperity of the companies alluded to, and thankful for the good services he has rendered) trust he may live long to enjoy.

The part which Mr. Austen has played is this: he was introduced to the company by their solicitor, who, I believe, was impressed with an idea that Mr. Austen could so *adapt his scheme for deodorizing sewage matter* to the West Worthing sewers, as to obviate the necessity of constructing filter-tanks, as designed by Mr. Dean.

Mr. Austen has explained in your journal the nature of his scheme, and you will therefore form your unbiased opinion of it. I also have formed mine, and by-and-by may possibly express it. At this time I will simply state that I am afraid Mr. Austen, in calculating the cost of putting his scheme to work, and the economical and beneficial results derived from it, has adopted (so far as West Worthing is concerned) uncertain data as the basis of his calculations, inasmuch as his operations at that place are confined to an experiment on a very small scale, viz., to four or five houses in Heene-terrace and the Heene Hotel, and to a population of less than 100.

I trust your sense of fairness will induce you to give publicity in your journal to the foregoing.

A LOVER OF FAIR PLAY.

FILTERING TOWN SEWAGE.

SIR,—The description in your paper of the system of house drainage now being tried at New Worthing by Mr. Austen, cannot but raise the question, Who first proposed it? since it differs materially from the mode originally put forward by a Mr. Austen, whether the same gentleman or not I cannot say. My present purpose is to hand you an extract from a paper addressed by me to the Commissioners of Sewers for the metropolis, on the 18th of August, 1849, describing the plan I then submitted for the drainage of London, when it will be remembered about 200 in all were received and "shelved:"—

"It is suggested, therefore, to establish an effective system of drainage upon a *diverging* as opposed to a *converging* principle, by a combination of properly constructed public and private filtering soil-tanks, in order that the foul portion of house sewage may, while small in quantity, and therefore easily controlled and dealt with, be separated by a filtering process, and by which it may be also partially (or, if necessary, wholly) deodorized."

In 1856 the same views were put before the Board of Works before the main drainage works were commenced, together with a protest against so large an outlay for results that were foreseen would be but partial and imperfect, as they now prove to be.

If Mr. Austen claims to be the originator of the filtering mode of dealing with town sewage, and can refer to an earlier date than 1849, in proof of his title to consider the system his own, it will not be further disputed by

SANITARY ENGINEER.

INDIAN CIVIL SERVICE GRIEVANCES.

SIR,—The answer of Mr. Macrone, the Assistant Secretary to the Government of India, P. W. Department, to the letter of your correspondent "C. E.," of October, 1865, which answer appeared in your issue of August 4th (after a year's interval nearly), is so unsatisfactory, even on those points which it notices, that it will not do to let it pass unchallenged. He begins by stating that it is not the *intention* of Government to reserve the first grade chief engineerships for military men, and then proceeds to show that a very considerable part of their duties "can only be dealt with by military men." I leave your readers to draw the inference as to whether good intention or evil practice is likely to prevail in such a case. At the same time I do not think that civilians now in the Department, or those now entering, need trouble themselves much about this,—it will be time enough three generations hence; let us be satisfied with equalizing the time of promotion to the grade of superintending engineer: "sufficient for the day is the evil thereof." He then proceeds to dispute "C. E.'s" assertion about the length of service of civilians to the last-named grade, which "C. E." places at twenty years, and says that out of the five men who now hold that rank, not one is of twenty years' service. He, however, cautiously omits to state how many of these five never served in the lower grades, but were appointed executives at once, thereby escaping what is frequently the greatest sticking-point. In my opinion he will be a lucky man who, entering the Department as an assistant engineer, becomes a superintending engineer in twenty-five years; but, until a few more such cases have occurred, it is premature to fix an average. Then he takes the case of the pay, and says that Rs. 200 a month will keep a young engineer comfortably, because, forsooth, subalterns in marching regiments get 300*l.* per annum. He forgets that one comes out here to lead an easy life, with nothing on earth to do, and that the other is hard worked, and is frequently obliged to live a solitary comfortless life, with no friends and no one to speak to, and has heavy responsibilities; and besides, is it not a universal complaint throughout India, that a subaltern cannot live on his pay in his regiment? That there are 220 civilians in the Department proves nothing; the men who have cause to grumble are those who, having learnt their work at home, come out

here to do it. How many of these 220 ever *came out as assistant engineers from England?* I have no list at hand, or I would endeavour to answer the question. I put the number at about fifty. If this be the case, Mr. Macrone's statement that "the pay has proved sufficient to attract about 220 men," is a very disingenuous one, for he well knows that to this class of men alone was "C. E.'s" letter addressed.

Then as to the difference between military and civil pay,—his argument is this:—Because a military man in the Department may occasionally be called upon to do military work (his own regular work), therefore, when he does not do military work, but does civilians' work, he draws more pay than the civilian, who always does this work and no other. Queer logic this. It matters little whether you call the pay "staff pay," or any other pay, the facts are the same, and the labourer (military or civil) is worthy of his hire; and until this point is conceded, the civil engineers will never, and, I consider, ought never, to be satisfied that they are justly treated. This is the only department of any extent where the invidious practice still obtains of paying men differently for the same work; in all others pay is "consolidated," and these venerable arguments were not considered strong enough in this case, because the civilian interest was too powerful; but they will never want vitality, nor more will any other abuses, as long as there are persons in authority whose interest it is to uphold them. Mr. Macrone then falls foul of "C. E." about promotions: the latter declares, that as a rule they were fair, but that military men had a slight preference. This Mr. Macrone first disputes, and then in the next paragraph admits it. I am quite ready, for one, to give Government credit for wishing to do justice in this matter as far as possible; still, when two men, one a civilian, the other an officer in the army, are recommended, and both have equal claims, I think no one will deny that the latter would get the step; and this, I take it, is all that "C. E." meant; nor can this ever be remedied until the department is a less military one than at present. That the prospects of civilians are better now than they were ten years ago is indisputable, simply from the fact that then they had none at all; but until you can make a young civil engineer at home believe, that after serving his apprenticeship, and picking up all the professional knowledge that he can, he is a less useful engineer than a young officer who has gone through a twelvemonths' course of civil engineering in a college in India, you will have some difficulty, I apprehend, in making him believe that he ought to receive a less amount of pay. And now that they have the best defence Government can make to our complaints of ungenerous treatment, they will, at any rate, if they do agree to the bargain, do so with their eyes open. VOX IN SICCO.

Bengal, October, 1866.

OUR STREET-LAMPS.

It has always struck me, that as we might, yet do not, utilize gas for the ventilation of our houses and places of public resort, such as restaurants, theatres, &c., so in our streets we do not obtain from the beautiful light as much advantage as we might expect.

Some years ago I ventured *incognito* to hint to the prefect of the Seine at Paris, that perchance lamps, whereof the major part of the light was wasted, might well be improved, and that the simplest way of doing so might be by whitewashing the internal top glasses, if it were not well to go to the expense of placing reflectors therein. Any one who has lately been at Paris must have seen the new lamps. As far as appearance goes, they are certainly superior to the old: as far as light goes, about on a par. It seems to me that they likewise are made on a false principle. I am unfortunately an unscientific individual, but if you are willing to moot the subject in your interesting and useful paper, it will doubtless elicit a scientific elucidation.

Our lamps at present, hideous as they are, allow, *according to me*, the rays of light, which ought to be reflected, to be lost in the atmosphere.

The French lamps, according to my humble notion, reflect but little light, and that merely directly on the pavement, and without projecting the rays to any distance laterally. According to my judgment, a lamp ought to be as nearly as possible a quadrilateral placed diamondwise, and the light, instead of being at one-third of the height, ought to be at one-half. Perhaps some of your readers might ventilate this subject, and if they succeeded in throwing some more light on the streets, they would be deserving of the gratitude of all citizens, and, amongst others, of R. C.

*** Similar suggestions have been made in our pages before.

THE FUTURE OF THE VOLUNTARY ARCHITECTURAL EXAMINATIONS.

SIR,—The sentiments I am about to express will not be thought very new or original, perhaps, but will, I persuade myself, find an echo in most hearts among the younger members of the profession. From my point of view, and I am one who would like to see the subject fairly discussed, the voluntary architectural examinations, as at present constituted, will not do for the present age, for various reasons. First and foremost, they do not meet the want they profess to supply: not that I mean to say they are of no use whatever; far from it; but their practical utility is confined to the profession and not to the public at large. For instance, if So-and-So wants an assistant the answer is very ready,—"Oh! here is T., he has passed the voluntary architectural examination: this is sufficient recommendation." But suppose T. to have set up for himself, what information does it convey to a client to be told that he has passed? Little or none.

To be effective they must be general: to make them general they must be compulsory; as compulsory as that a clergyman shall take his M.A. or a physician his M.D.: add, moreover, that when a man has passed, *he*, too, shall have his diploma, "British Architect," in the face of the world. At all events, some sufficient attraction must be held out to young men, or they *will not* come forward. This is essentially a utilitarian age, and every one asks, "What shall it profit me?" Is it not so?

If any ask how is the diploma to be obtained? I reply, let the Royal Institute of British Architects petition Government for a charter empowering them to make examination compulsory, and to give degrees: so will they confer a boon on their generation, and be wise in it.

R. B. M.

HOW CHURCH BELLS ARE CRACKED.

CHESTER CATHEDRAL possesses a peal of five heavy bells, which gave out their music on the 9th ult. in honour of the birthday of the Prince of Wales, when a piece of metal, weighing 37 pounds, was broken out of the largest bell, called the tenor. This bell was re-cast in 1738, its weight being about 36 cwt., and it regularly sounded in the evening as the curfew, till it received a death-blow.

The cause of the fracture may be thus explained. The clapper had recently been repaired, or tampered with, and made too long, so that it struck the bell below the sound-bow. And as other valuable bells have now and then come to grief under similar circumstances, the fact is mentioned for the information of those who are responsible for the proper use of bells and belfries. If the clapper strikes too high it will not bring out the proper tone; if too low, it will certainly crack the bell.

I may also point out a dangerous mode of tolling and chiming bells, as practised in too many places, namely, hitching a rope to the clapper, and so pulling it against the side of the bell, instead of pulling the rope attached to the wheel in the legitimate way, till the bell meets the clapper. Two bells were so broken at Canterbury Cathedral. And the Rev. H. T. Ellacombe, in giving a caution against the practice referred to, states that sixteen fine tenors have been so cracked in London within memory; while Mr. E. B. Denison says he believes that more bells are cracked by tying the ropes to the clappers than by all other means together.

THOMAS WALESBY.

WHAT ABOUT THE MEMORIAL CHURCH AT CONSTANTINOPLE?

SIR,—Doubtless you will remember that a large sum was placed in the hands of the Society for the Propagation of the Gospel, to found a *Memorial Church* at Constantinople, after the Crimean War.

I beg leave to address an inquiry to your influential publication, whether you know anything as to its progress, state of building, &c., if above-ground? as the Society who hold the money (18,000*l.* or 20,000*l.*, I believe), publish *nothing* which reaches the eye of the public at *large;* and the managers or committee have passed out of recollection and knowledge, and it must be in the hands of a very small number of that Society. My family and myself are considerable subscribers; and I believe you published in the *Builder*, some years back, an approved view of the building; but the procrastination is such as to exhaust all patience.

H. F. AINSLIE, Colonel, late 83rd Regt.

CASE UNDER THE METROPOLITAN BUILDING ACT.

ON the 21st ult. Mr. Henry Jarvis, the district surveyor of Camberwell, Surrey, summoned a builder before Mr. Norton, at the Lambeth Police-court, for an irregularity in having built brickwork 4½ in. thick against walls in order to make them of the thickness required by the Building Act. The surveyor contended that such thicknessing of walls did not carry out the intention of the Building Act, nor did it constitute bond regular and proper; and he called two builders, Mr. Thompson and Mr. Tarrant, who gave it as their opinion that walls with the half brick added having headers at irregular intervals were not properly bonded as required by the Act.

Mr. Watkin Williams, on behalf of the builder summoned, drew Mr. Norton's attention to the decision of Mr. Elliot, the magistrate, in a similar case, namely, that such thicknessing was lawful. Two surveyors were called to support this view.

Mr. Norton dismissed the case, observing that he thought it a very proper one to be brought before him.

THE REMOVAL OF NEWGATE.

"G. E." writes,—When the crowded state of the City, and the great value of the land there, are considered, the ugly gaol should not be allowed to encumber and disfigure the very centre of the capital any longer. The cost of a new building would soon be defrayed by the rents for the enormous space now in the occupation of most undesirable tenants. The whole of the outer masonry could be used again—a great consideration on the score of expense,—and should the suggestion be adopted, the whole vicinity would rise at once in character, wealth, and importance: so the sooner the "dreary pile" is removed the better.

CHURCH-BUILDING NEWS.

Faccombe (*Hants.*).—The new parish church here has been consecrated by the Bishop of Winchester. The site is about a mile from that of the old church, and is more central for the population. The church is in the Decorated style, having a tower at the west end about 43 ft. high, upon which it is intended to build a stone spire 45 ft. high; this has not hitherto been done: as the church and tower are constructed with flint and Bath stone dressings, it is thought desirable that the flint-work of the tower, which is now green, should stand a few months before the additional weight of the spire be put on. The church comprises a nave, 52 ft. by 21 ft.; chancel, 18 ft. by 15 ft.; with a vestry and south porch. The architect is Mr. G. B. Mussellwhite, and the builders are Messrs. Hillary, of Andover.

Tilney, near Lynn, Norfolk.—The fine old parish church has recently been re-opened, after restoration: the chancel by the Master and Fellows of Pembroke College, Cambridge; the nave by the parishioners. The chancel roof, originally a fine specimen of a hammer-beam roof, decorated with angels, but sadly decayed and patched with deal and Scotch fir, has been carefully renewed in oak, similar to the original design; the old timbers, where possible, being re-used, and the whole re-covered with lead. The old stalls and screens have also been carefully restored. The body of the church has been reseated with substantial oak benches, corresponding in character with the church. The stonework has been freed from the incongruous paint and whitewash, and the walls replastered. The work has been done from the drawings and under the supervision of Messrs. Corry & Ferguson, of Carlisle, architect; the woodwork of the chancel by Messrs. Rattee & Kett, of Cambridge; that of the nave by Mr. George Moody, of Durham.

Dorking.—The foundation-stone of the new chancel of St. Martin's has been laid. The design sent in by Mr. Woodyer, architect, was adopted by the donor, Mrs. Forman, with considerable additions, and the builder's work was given to Messrs. Wheeler, Brothers, of Reading. The chancel will be in the Decorated Gothic style of architecture. The estimated cost is 3,750*l.* Mrs. Forman intends putting in stained glass windows at a cost of about 1,000*l.* more. There will be one large window in the east end, and three on either side.

Coseley.—Christ Church, Coseley, which has been closed for about four months, to undergo certain alterations and improvements in the interior, has been re-opened for divine service. The chancel, which formerly was very small, has been made 15 ft. longer, and the floor laid with a design in encaustic tiles. A number of carved stalls have also been placed therein to seat sixty persons. The ceiling of this part of the church has been panelled and painted by Mr. Tatlow, of Wolverhampton. The whole of the interior of the church has been repainted. The organ has been removed from the western gallery into the chancel. One of the pipes was discovered to bear the following inscription:—"William Sherman removed this organ from Ashted Chapel, Birmingham, in 1807. It was bought for 630*l.* Signed, Dr. Croft." The organ was removed to Christ Church, from Wednesbury, in 1830, by Mr. John Banfield. The cost of the alterations is 1,000*l.*

Shipmeadon (*Suffolk*).—A new chapel, designed by Mr. G. E. Street, for the use of the inmates at the workhouse at Shipmeadon, has been consecrated. It has been erected by voluntary contributions. The centre window is a memorial to the late Rev. R. A. Suckling, formerly incumbent of Bussage, Gloucestershire, and was presented by ladies, in token of the benefit they had derived from the perusal of his biography and writings.

Lincoln.—The new pulpit for Lincoln Cathedral is about to be fixed in its resting-place. Mr. R. Farmer, the sculptor of the panel sub-

jects and the sixteen statuettes intended for its adornment, informed the committee of the Lincoln Diocesan Architectural Society that he hoped to have those subjects ready by the 8th of December, and the committee therefore decided that the pulpit should be erected prior to that date, and presented to the Dean and Chapter.

Horningsea.—The chancel of the old parish church of Horningsea has been re-opened for divine service. The work of restoration of the church had been commenced last year, when, at the expense of the incumbent and the parishioners and others, the nave, north and south aisles, and interior of the tower were put into repair. The work of restoring the chancel has been carried out at the expense of the Master and Fellows of St. John's College. A new roof of oak has been added, the north wall rebuilt, and the interior has been furnished with carved oak seats, and enriched with a pavement of encaustic tiles. The parishioners have also during the present year restored the ancient porch. The works have been carried on by Mr. Balls, of Norwich, builder, under the direction of Mr. Thomas Jeckyll.

Burton.—The parish of Winshill, an important suburb of the town of Burton-on-Trent, having rapidly extended of late years, Mr. John Gretton some months ago expressed his willingness to erect a church at his own cost, and the Marquis of Anglesey having given a site, the foundation-stone has now been laid. The church, which will be erected from the designs of Mr. E. Holmes, of Burton, will be in the Early Decorated style of architecture, and will consist of a nave 72 ft. long by 24 ft. wide, north and south aisles 12 ft. wide, and chancel 30 ft. by 21 ft. The vestry and organ chamber are to be on the north side of the chancel. The body of the church will be divided into four bays, the arches of which are to be of Bath stone, splayed with an outer arch of Hollington and red Mansfield stone, and will be carried by square piers of Bath stone and alabaster in bands, with a red Mansfield stone shaft on each face of pier, and carved caps and moulded bases. The tower is to be at the south-west corner of the church. The roofs will be boarded on the under side of the rafters; the principal timbers of the nave roof will be enriched, and the king-posts carved and moulded, the wall pieces resting on stone corbels. The height from floor to ridge of nave roof will be 54 ft., and from floor to top of wall-plate 29 ft.; the height from floor to top of wall-plate in aisles is to be 18 ft. 6 in., and from thence the roof slopes upwards almost to the height of the nave wall-plate, an eaves course and spout dividing the nave from the aisle roofs. The tower will be 65 ft. high, and the spire 75 ft.; the total height, exclusive of vane, being 140 ft. The church will provide accommodation for 500 adult persons, the full width of 3 ft. being allowed in the sittings from back to back. The whole of the visible woodwork will be stained and varnished, except the entrance doors, which will be of oak. Messrs. Clarke & Lilley are the builders.

Bunbury.—The nave, aisles, and exterior of the parish church have now been restored. Beyond the temporary screen cutting off the chancel from the rest, nothing has been touched; and here the whitewashed walls, split and crumbling plaster, rotten, shaky, and water-dripping roofs, fading ornamentation, chipped statuary, and time-worn mouldings, may be seen in contrast with the nave, with its shafts cleared of all overlaying material, and showing the bare stone; its corbels of saints and ogres newly chiselled, and, where necessary, completed to what seemed the original design; its seats thrown open, and arrangements generally suited to the style adopted by the early builders. Until the present restoration, the nave had, as part of the chancel still has, a plaster ceiling, and some long low garret windows for the clerestory, supported by walls made of oaken beams. This was taken down, a new cornice added, and new clerestory built, with windows in the style of the rest of the building. The roof is now supported by small pillars with foliated capitals springing from the cornice, and resting on carved figures of angels. The new roof is open-timbered. The pillars of the church are slender and lofty, and the nave resembles that of the church of Austin Friars, London. The church has been newly floored, the earth being excavated underneath to a depth of from 18 in. to 2 ft., and ventilation under the floor secured. The floor under the tower has been lowered to its original level, and by this means the bases of the pillars with their mouldings are brought to light, the whole of them having been restored. The tower springs from four piers at the west end of the nave. The remains of the ancient altar-pieces still exist, the one in the Calveley chancel consisting of carved stone, and that in the Spurstow chancel of an ancient and curious painting of the Resurrection, with two bishops in the act of pronouncing benediction. Both these memorials were discovered by the Rev. W. Lowe, M.A., the vicar, chairman of the Restoration Committee, and have been by him preserved. The corbels anciently supporting the rood screen have also been preserved. The Ridley Chapel, erected by Sir Ralph Egerton, of Ridley Hall, in the reign of Henry VIII., is at present in a state of great dilapidation. A share of attention has been given to the exterior of the church. The open balustrade on the north side has been perfected, and a new course of battlements erected on the south side; while a double row of pinnacles and a series of gargoyles have been newly carved and put up. In the course of excavation, some sarcophagi and slabs of early date were turned up, the inscriptions and figures in relief upon which are in good preservation. With the nave and exterior the work of restoration has stopped for the present, the Committee having already made themselves responsible for nearly 400*l.* above what has been collected, in order to throw open the church for divine service. The expense already incurred amounts to 2,618*l.* The total sum now needed to complete the work is about 900*l.* The sittings will all be free and unappropriated; the old pews have been removed, and for a time chairs will be used.

ROMAN CATHOLIC CHURCH-BUILDING NEWS.

Doncaster.—The foundation-stone of the new church, now building in Prince's-street, has been laid. Messrs. M. E. Hadfield & Son, of Sheffield, are the architects for the building, and Mr. Rodley, of the same place, is the builder. The dimensions of the new church will be 84 ft. in length by 44 ft. in width, and the structure will be of brick and stone, in the style of the early part of the thirteenth century. It will consist internally of a nave, terminating with circular apsis, and a north aisle with an arcade of marble, and with pointed arches. The main front will present a deeply-recessed pointed doorway. On the north side there will be a lofty turret with a slated spire. The cost of the edifice, exclusive of furniture, is estimated at about 1,500*l.*

Stratford-upon-Avon.—A new church has been opened here. It is dedicated to St. Gregory. The building has been erected from the designs of Mr. Welby Pugin, in the First Pointed style, and it affords accommodation for about 300. The building has been erected in coursed lime-stone, with dressings of stone from the Bath quarries.

STAINED GLASS.

Snenton Church.—An obituary window of stained glass has just been placed in the parish church of Snenton, near Nottingham, by Mr. Henry Taylor, in memory of his son. The window, of a single light, is on the north side of the chancel. Messrs. A. & W. H. O'Connor, of London, designed and executed it. The principal feature in the window is a figure of Faith, illustrating Habbaknk iii. 18, "I will rejoice in the Lord, I will joy in the God of my salvation." The subject is treated on a ruby ground, the emblematical colour of divine love. At the feet of the figure are groups of lilies, beneath which is an artistically-arranged monogram of the initials of the deceased. At the top of the window is the *Agnus Dei:* under the symbol of salvation the Holy Spirit is descending in the form of a dove between angels. The details of the whole ground of the window show the vine as the emblem of the Church.

The Parish Church, Wilmslow (Cheshire).—A stained glass window has been placed in the east window of this church by Mr. J. B. Prescott, in memory of his father. The window is Perpendicular in style, and is divided into five openings, extending from base to spring. The three centre openings are filled with a picture of the "Good Samaritan," illustrating the text from Luke x. 31-35. This picture is surrounded by a foliated canopy and pedestals, with the text, "Go and do thou likewise." The remaining two lights are horizontally divided, thus forming four spaces, which are occupied by subjects. It was executed by Messrs. Edmundson.

Kempsford Church.—The Arkell memorial window is now completed, and fixed in its place. The designs and glass were supplied by Messrs Heaton & Butler, of Covent Garden. The window consists of three lights, and represents the general Resurrection. In the upper part appears our Lord in Glory, surrounded by the four-and-twenty elders; the lower is occupied by groups rising from their graves, and departing to the right hand or left hand; their countenances being expressive of every variety of feeling. The glass in the tracery represents the new Jerusalem, with the river and the tree of life. The glass is of Powell's manufacture.

Lymington Church.—A memorial window has been placed in the south wall of the chancel of this church. The Ascension, and the Raising of Jairus's Daughter, are represented.

SCHOOL-BUILDING NEWS.

Barnsley.—The foundation stone of new schools about to be erected for St. Mary's parish, Barnsley, has been laid. The building is to occupy a site on the east side of Churchfield, a few yards distant from the church, and the entrances will be from Roper-street. The plans, which were prepared by Mr. G. F. Bodley, of London, provide accommodation for 460 children. There will be separate school-rooms for boys, girls, and infants; also two class-rooms. The estimated cost is about 2,800*l.*

Darlington.—A new national school, for 350 scholars, has been opened here. The buildings, erected from designs by Mr. John Ross, of Darlington, consist of class-rooms in the centre, surmounted by a bell-turret; boys' and girls' school-rooms in each wing; porches, lavatories, and master's house, the whole forming an extensive and pleasing group of buildings. The style is Early Gothic, and the materials are red brick, with stone dressings.

Kirkdale.—The foundation-stone of the extension of the Industrial Schools, Kirkdale, has been laid. The schools afford accommodation for about 1,500 children, the average number of inmates being 1,300. The additions will include accommodation for the infant class of the destitute poor; and it is arranged that, if necessary, 500 children may be boarded and educated in the new building. The new wing will occupy a large space of ground, and arrangements have been made for dormitories, school-rooms, and playgrounds. The style of the building is the Lombardo-Venetian. The architects are Messrs. J. A. Picton & Son; the contractor, Mr. John Westmorland. The cost will be from 18,000*l.* to 20,000*l.*

Huddersfield.—The foundation-stone of new church schools now in course of erection has been laid on a site adjoining St. Bartholomew's Church. The schools are in an advanced stage of erection. They are being built in the Early Decorated style of architecture, from the designs of Messrs. John Kirk & Sons, architects, Huddersfield; and will consist of a school-room, 65 ft. by 30 ft., to accommodate 350 scholars. In addition to the school-room there will be two class-rooms. The land had been given by Mr. Charles Brook, jun. The probable expense, including the conversion of the existing schools into an infant school, has been estimated at 2,000*l.*

Books Received.

The Law of Fixtures and Chattels; to which is added the Law of Dilapidations. Second edition. By Standish G. Grady, Esq., of the Middle Temple, Barrister-at-Law. London: Wildy & Sons, Carey-street. 1866.

The law of fixtures with reference to real property and of chattels of a personal nature, as well as of dilapidations, ecclesiastical as well as lay, is here laid down in a way intelligible to non-professional men, for whose guidance it is specially intended.

It is divided into different chapters, which are respectively devoted to the different classes of persons between whom questions generally arise, with respect to the right to remove fixtures, viz., heir and executor; tenant for life or in tail and remainder-man or reversioner; and landlord and tenant. These different chapters are again subdivided into sections in which the exceptions that have been engrafted upon the general rule in favour of fixtures erected for the purposes of

trade, of agriculture, of ornament, convenience, or domestic use, are discussed. The cases which are the subject of express contract are treated under the head of "Sale or Transfer of Fixtures between landlord and tenant; vendor and vendee; mortgagor and mortgagee; heir and devisee; bankrupt and assignee;" and then follow chapters on "the rights, exemptions, and liabilities conferred and created in respect of fixtures; on heir-looms, and emblements; on the time of removal of fixtures; on legal remedies;" and the inquiry concludes with practical suggestions on survey and valuation.

It has been deemed advisable, as in some measure connected with fixtures, to introduce the Law of Dilapidations. The subject is treated under two distinct heads, "Ecclesiastical" and "Lay," which are again subdivided in such manner as the author considered requisite to elucidate the law.

That this is a work of very general utility is evident, not only from the nature of it and from the competency of its author, but from the fact that the first edition of it has been exhausted and a new edition called for.

VARIORUM.

With Christmas comes a whole flight of six-penny and shilling annuals, made up of tales by various writers and woodcuts by various artists, some good, many bad; some tied together by an ingenious editor, others loose and independent. The *Once a Week* Christmas part is of the latter kind, and includes contributions from "John Halifax," Shirley Brooks, Mark Lemon, Mary Howitt, Mr. Burnand, and others. It is certainly a very good sixpenny-worth. "Routledge's Christmas Annual" is edited by Mr. Edmund of that name, and begins with a sensational and not bad story, by Mrs. Wood. Mr. C. H. Ross, with many of his sketches, a little too rude for us, is a chief contributor, Mr. Burnand another; Stirling Coyne, Andrew Halliday, Arthur Sketchley, Hain Friswell, and others, aiding and abetting. Cassell's Christmas Annual is called "My Pale Companion," the title of the first story, by Clement Scott, which is made to introduce others by industrious Tom Hood, W. Brough, Arthur Sketchley, L. Hough (who gives a startling little story), John Plummer, the one-while factory operative, now profitably working in a line more to his taste, and one or two more.——Messrs. De la Rue & Co. have issued as usual their "Indelible Diary and Memorandum Book" in all sorts of sizes and bindings,—tasteful as well as scientific. The illustration is a Star Cluster, 13 M Hercules. A "Red Letter Diary and Improved Memorandum Book, 1867," comes from the same publishers.——"The City Diary and Almanac, 1867," is published (*City Press*, Aldersgate-street). The space given for each day is rather too small.——"The Farmers' Almanac," edited by Mr. Cuthbert Johnson and Mr. W. Shaw contains much information very useful to those to whom it is addressed.——"Dozens *versus* Tens; or, the Ounce, the Inch, and the Penny, considered as Standards of Weight, Measure, and Money, and with reference to a Duodecimal Notation." By Thomas Leech, F.C.S. London: Hardwicke. 1866. The decimal question is moderately discussed, and its advantages, as well as its shortcomings, are treated of. The change from the duodecimal to the decimal system will take place sooner or later, the author remarks, so that it is as well to be prepared for it. That all our present coins could be retained with their values unaltered, the author shows as he goes along, so that the change will not be so violent as at first sight may appear.——"The Surrey Hills: a Guide to the Caterham Railway and its Vicinity." Russell Smith, Soho-square. Although the purpose of this little guide is obviously to advertise and benefit the Caterham district and its railway, the neighbourhood with its useful quarries, its picturesque scenery, and its general associations, is an interesting one, and deserves to be brought into notice in a readable way, as is here done. A small map of the district is appended.

Miscellanea.

Hop Trellices.—A gentleman named Farmer has taken out a patent for a method of growing hops on the trellice principle. The chief feature of his plan is the employment of wire instead of string in training the bine.

New Congregational Church, Lewisham.—The memorial stone of a church, now being erected at Lewisham for the use of the Congregationalists of that increasing neighbourhood, was laid on the 20th ult. The total cost of the church, which will be of large dimensions, and will have a lofty spire, is estimated at about 8,000*l*.

Blackfriars and Southwark Bridges.—Notices have appeared of an intention to apply to Parliament for power to the Corporation of London to borrow money on the credit of the Bridge House Estates, to complete the rebuilding of Blackfriars Bridge, and to enable the Corporation to purchase Southwark Bridge under the powers of Section 2 of the "Southwark Bridge Transfer Act, 1865."

Consecration of St. Andrew's Church, St. Pancras.—The new church of St. Andrew, Haverstock-hill, was consecrated on Thursday in last week. The church is built of stone and brick, with Devonshire marble pulpit, desk, and font. Mr. C. F. Hayward was the architect. The means were supplied by an anonymous donor (acting through the Bishop of London's fund), who has provided the funds (4,500*l*.), for the fabric, and also for an organ.

When to Cut Timber.—Experience has shown that the time when trees are felled has much influence upon the condition of the wood. A trial was made with four pieces of oak cut down in December, January, February, and March. A tin ring was fixed at one end of each piece. These rings were filled with water. The wood cut in December did not allow any water to pass. The January wood, after forty-eight hours, allowed a few drops to pass. During the same time the entire quantity ran through the February wood, while the water passed through the March wood in two hours and a half.

Elsden's Almshouses, Lynn.—Eight new almshouses have just been completed, and brought into occupation, in and for the parish of South Lynn, in pursuance of the will of the late Mr. Henry Elsden. The building has been erected by Mr. C. Bennett, builder, Lynn, at a cost of between 1,300*l*. and 1,400*l*. The houses are in four pairs, placed on three sides of a forecourt. The materials are red brick with stone dressings, slated roof, ornamented gables, ridge tiles, and chimney stacks. Each house consists of two rooms (one 14 ft. square, and the other 14 ft. by 9 ft.), and each pair is approached by a porch common to both occupants. There are also outbuildings, yards, and small gardens, and the front is to be enclosed with a palisading of iron.

Street Tramways for Liverpool.—Amongst the Parliamentary notices is one for street railways in Liverpool. The leading features of the project may be described as consisting of a series of tramways starting from different points or centres of population on the south, the east, the north-east, and the north of the town, all converging to the Exchange as a common centre, and returning thence to the original starting-point by a route which includes the encircling of the important business portion of the town, which is enclosed by Lime-street, Elliot-street, Church-street, Lord-street, Castle-street, Dale-street, Manchester-street, and St. John's-lane. The projectors intend running cheap journeys in the morning and evening for working men and women. As in the case of the American street-railway system, the carriages,—or cars as they are called in America,—will be large, well lighted, and in every way comfortable.

The Graphic Society.—The first *conversazione* will be held on the 12th inst. Others will follow, January 9th, February 13th, March 13th, April 10th, and May 8th. Mr. Foley, R.A., is president for the year, and Mr. C. C. Atkinson continues his valuable services as honorary secretary. The new members elected are:—*Painters*—Frank Holl, jun. and E. J. Poynter. *Sculptor*—Thomas Woolner. *Architect*—Alfred Waterhouse. *Engravers*—Charles J. Jeens and Thomas Vernon. The following have been elected "Literary and Scientific Visitors" for the year:—Professor Ansted; Professor Babbage, F.R.S.; J. W. Bazalgette; Wilkie Collins; G. Godwin, F.R.S.; Charles Hutton Gregory; Rev. G. Hamilton, M.A.; Wm. Haywood; Professor Huxley, F.R.S.; John Cordy Jeaffreson; Professor Morley; H. Murray, F.S.A.; Thomas Page; Dr. Percy, F.R.S.; Professor Sharpey, M.D., F.R.S.; Dr. Sibson; Palgrave Simpson; Samuel Smiles; Ralph N. Wornum; and B. B. Woodward, esqrs.

Street Tramways for Dublin.—A project is now in contemplation for laying down lines of tramways through many of the principal streets of Dublin. The corporation, as custodians of the city thoroughfares, it is said, have given their sanction to the scheme.

The Australian Industrial Exhibition.—The Industrial Exhibition at Sandhurst, Australia, was opened with great ceremony by his Excellency Sir Henry Manners Sutton, on Thursday, the 13th of September. The Australian papers speak of the Exhibition as a great success.

House set on Fire by Lime.—During heavy rain at the bleach-mill belonging to Mr. Pickering, near Loughton, an out-house with its contents, a cart, ploughs, &c., were nearly all destroyed by the rain communicating with some unslaked lime contained in the building, which soon ignited, and the fire had made considerable progress before it could be overcome.

Belgian Iron Girders and Joists.—It appears that the importation of iron girders and joists from Belgium is now a regular branch of London trade, a business circular which we have seen, offering to "undertake delivery as early as for girders made in this country," and presenting an illustrated sheet of sections, for which orders will be received.

Braintree and Bocking.—A new school-room has been opened here for Sunday Schools in connexion with the Independent Chapel. The new school-room, which is erected at the rear of the chapel, is 60 ft. by 28 ft. In addition to the large school-room there are three class-rooms, with vestries and offices. The contract for the building was taken by Mr. G. Laver, of Braintree, builder, for 910*l*.; and the total cost, inclusive of land, fittings, &c., was about 1,300*l*.

The Castle Hotel, Aberystwyth.—This edifice has been offered for sale by public competition. It was erected by Mr. John Savin, contractor, at a great cost. One wing of the hotel is still incomplete, and it would require some 20,000*l*. or more to finish it on the scale in which it has been commenced. The building was put up at the nominal amount of 20,000*l*. No bidding, however, was made approaching to that amount, although the Castle is said to have cost the proprietor 80,000*l*. for construction alone. The only bidding offered was 5,000*l*.

Overflow of the Thames.—Notwithstanding that dams were constructed, and other precautions taken against a recurrence of a previous high tide, the river rose on Monday morning to an extraordinary height, and fears were entertained that the works of the Thames embankment would be greatly injured by the immense pressure of water on the piles. Slight damage, however, occurred. Several wharfs in Lambeth, Bankside, Bermondsey, and on the north side of the river, at Shadwell and Limehouse, were inundated, and much damage done.

The Late M. Mueseler.—A short time back we announced the death of M. Mueseler, the inventor of the safety-lamp which bears his name, and which is now used in all Belgian coal-mines. A *fête* was organised at Liége a few days ago to celebrate the twenty-fifth anniversary of its introduction, and the occasion was taken advantage of to present to the son and daughter of the late M. Mueseler a handsome service of plate, originally intended as a testimonial to their father, and which had been subscribed for by the colliers of the district. Such spontaneous expressions of gratitude to inventors are not by any means too common, and it is to be regretted that M. Mueseler was not spared to receive the testimonial.

Artificial Wood.—An important branch of industry has recently sprung up in Rhenish Prussia. It consists in the manufacture of various articles from refuse wood and saw-dust, which are agglomerated by a cement, the exact nature of which is not stated, and then pressed in moulds, so as to form covers for photographic albums, small picture-frames, rosettes and other ornaments for the use of cabinetmakers, &c. For the last-mentioned articles the composition is stained to imitate ebony, mahogany, walnut, and other woods. The composition, or "scifarine" as it is called, may be sawn, cut, drilled, attached together by glue, and bent on hot plates. It may be polished with oil or French polish, and may be varnished and gilt. A similar composition was manufactured in France a few years ago by mixing fine saw-dust with blood, and submitting it to the action of a hydraulic press.

THE VACANT APPOINTMENTS AT THE INSTITUTE OF ARCHITECTS.—Some misunderstanding existing, we are asked to mention that Mr. Fras. T. Dollman, the present librarian, is a candidate for the office of assistant secretary. A large number of applications have been already sent in. Amongst the prominent candidates whose names have reached us are Mr. Charles Lock Eastlake, Mr. J. W. Papworth, Mr. F. Warren, Mr. G. F. Roper, Mr. Wood, and Mr. Edward Hall, F.S.A.

THE GREAT BELL OF YORK MINSTER.—It is now proposed to recast this bell, and make it useful in striking the hours, by help of a better clock than the present one. The chief purpose of expending some 2,000*l.* or so about twenty years ago in obtaining this bell was, that the hours might be struck so as to be heard for fifteen miles round York, but all that has ever been done is to have the midday hour struck by hand with a wooden hammer. Mr. Denison says the bell is defective as well as the clock, and the local *Herald* devotes a leading article to the suggestion of Mr. W. Gray, that a subscription should be opened for the recasting of "Great Peter" on a somewhat smaller scale, and for the purchase of a new clock for the tower containing it, which was strengthened for the purpose of receiving the present bell, at a cost of 2,000*l.*

MR. DARGAN.—We regret to learn that Mr. William Dargan, the eminent Irish contractor, has been forced to execute an assignment of his estates on behalf of his creditors. Mr. Dargan was well known in connexion with Irish enterprises. He was offered a baronetcy by her Majesty, it will be remembered, as a reward for his munificence in putting up at his own cost the building for the Dublin Exhibition. He was the contractor for most of the railways in Ireland, and for many of the harbour works and waterworks. The liabilities are estimated at 150,000*l.* The assets consist mainly of about 300,000*l.* of railway securities, which, if forced upon the market, would probably not bring more than an average of about 44 per cent., but with care in realization may yield a much better result. What ups and downs are seen in these "fast" times of ours!

ACCIDENTS.—A new building, at the corner of Bridgewater-street and Deansgate, Manchester, last week gave way, and in a few minutes the whole structure was nothing more than a heap of bricks and timber. The Old Navigation Inn formerly stood on the site, but it was determined to partly rebuild it, and the work was proceeding rapidly, seventeen men being employed on the premises. When the side wall showed symptoms of giving way, the workmen who were outside speedily got clear off; but three men who were inside were unable to get out. Within half an hour, however, they were all rescued; two were apparently not much hurt, but the third man, a slater, had his leg fractured. Only part of the front wall of the house was left standing, and it was expected that that would not remain up throughout the day. The cause is attributed to the weather having prevented the proper setting of the mortar.——A gasfitter at Wolverhampton went into a well to repair a gas-pipe, when he was suffocated by the gas, and two other men were so much injured from the same cause, that they are not likely to recover.

YORK SCHOOL OF ART.—A good step has been made in connexion with this school. We believe the idea originated with Mr. J. Stephenson, of the locomotive department of the North-Eastern Railway works. At this establishment there are above 100 youths apprenticed to the engineering trade, and who are instructed in the various details of this branch of industry. It has long been felt that a deficiency existed through their receiving no instruction in sketching and drawing the various sections of machinery with which they are constantly brought into contact. To remedy this, Mr. Stephenson, finding that the amount of the fee charged at the York School of Art was the principal difficulty against their becoming pupils in that institution, waited upon the committee of management with a view of soliciting a reduction of the fee for these youths from 15*s.* to 10*s.* The committee assented to the proposition; and, as a still further inducement, the committee of the library attached to the North-Eastern works very handsomely offered to pay half the fee for all apprentices at the works who were willing to attend and receive instruction at the School of Art. The result has been most gratifying, a special class of nearly forty having been formed.

THE SOCIETY OF PAINTERS IN WATER COLOURS. The fifth winter exhibition of sketches and studies by the members of this association is now open. It comprises 418 frames with examples from all the members, and forms a very agreeable collection.

THE GOVERNMENT COMPETITIONS.—The Council of the Institute of Architects at their last sitting adopted the suggestion made at the opening meeting to memorialize Lord John Manners on the subject of the *judges* of the approaching competitions,—National Gallery, and Courts of Law. The President was requested to prepare a draft memorial for consideration at the next meeting.

NEW BANK, STOCKTON-ON-TEES.—A new bank for the old-established firm of Messrs. J. Backhouse & Co., at Stockton, has lately been completed from designs by Mr. John Ross, of Darlington. The new premises, which occupy the site of the old bank and an adjoining building, are three stories in height, and contain convenient banking rooms and manager's house. The façade is of "polished" ashlar, and terminated by a block cornice and pierced parapet. The style adopted is Italian, but freely treated.

OPERA HOUSE, COVENT-GARDEN.—In closing the recent successful series of concerts, Mr. Alfred Mellon announces that he has been induced and emboldened to undertake the production of a new grand Christmas pantomime in this theatre, which, he trusts, will be found to equal, if not surpass, in splendour and magnificence, the famed productions of past seasons. On the faith of what he has done, Mr. Mellon may fairly solicit an extension of public patronage to his new venture in theatrical management.

BEAUVAIS CATHEDRAL.—The *Moniteur de l'Oise* announces that a project has been set on foot to complete the Cathedral of Beauvais. According to that journal the initiative of this idea is due to M. Felix de Berg, a Frenchman, who during the last twenty years has resided in London, where he has acquired a large fortune. On his way to England, and while passing through Beauvais, he had visited the cathedral with all the attention of an enthusiastic archæologist. He counts on the co-operation of a large number of English noblemen, who, from their love of art, are likely to assist him.

MONUMENT OF MRS. A. PEEL IN WREXHAM CHURCH.—Mr. Woolner, says the *Athenæum*, has just finished a beautiful sculptured monument. This is in alto-relief, to be erected near the altar of the church at Wrexham, and is intended to commemorate the wife of Mr. Archibald Peel, son of General Peel. The lady died not long since, and soon after the death of her infant son. From this circumstance Mr. Woolner has derived what may be called the incident of his sculpture. The lady is seen as if received at the entrance of a heavenly abode by an angel or genius, who bears in arms the formerly lost infant, and allows it to stoop forward to caress once more the fainting mother, who, in an ecstacy, hesitates at the moment of ascending a step at the gate of the "heavenly mansion."

ALLEGED JESUIT "TRAP-HOUSES."—We have received a strange communication from an intelligent person in adverse circumstances, who has been obliged for some years to live in metropolitan lodging-houses, and who insists that an organized system of lodging-house "Romanizing," as he calls it, is carried on in hundreds of the metropolitan lodging-houses; and that, not being inclined to Romanism himself, he has been systematically persecuted, and driven from lodging-house to lodging-house, without being able for several years to escape from Jesuitical trammels. The whole affair, however, looks so like a delusion, that all we feel inclined to do in reference to our correspondent's appeal to us as a protector of the poor man from persecution and treachery, is to inform our readers of the drift of his long and circumstantial communication, in which he certainly talks wildly about "tens of thousands" being "forcibly converted by secret mesmerism and numerous other simpler but very evil trickeries, or destroyed if opposing such villainy;" and of his own persecution "all day and all night," to prevent his having the use of his room, because he merely had a habit of "muttering" to himself his dislike to Roman Catholicism, and believes that his detestation of Popery has been ascertained from his papers and writings by the use of duplicate keys.

MORTALITY.—The annual rate of mortality last week was 24 per 1,000 in London, 30 in Edinburgh, and 31 in Dublin; 22 in Bristol, 24 in Birmingham, 31 in Liverpool, 30 in Manchester, 18 in Salford, 22 in Sheffield, 29 in Leeds, 26 in Hull, 32 in Newcastle-upon-Tyne, and 29 in Glasgow.

ELECTRIC TRAIN SIGNALS.—A new kind of signal, invented by Mr. Funnell, watchmaker, Brighton, has been erected on different portions of the Brighton railway, and tested in presence of Colonel Yolland and Major Rich on the part of the Board of Trade to their satisfaction, according to our authority, the *Brighton Herald*. Representatives of various other railways were present, but the invention is not described.

THE RESTORATION OF WORCESTER COLLEGE CHAPEL: NEW STAINED GLASS WINDOW.—During the restoration of Worcester College Chapel it was decided that there should be new stained glass windows placed in it. The college tenants, therefore, asked permission of the Provost and Fellows of the College to be allowed to give one of the windows, the cost of which is about 120*l.* The request was complied with, and the formal presentation of the window has taken place. The glass represents "The Ascension of our Lord."

A "RAILWAY COUNCIL OF ENGLAND" SUGGESTED.—Mr. C. Baylis, in a printed circular, suggests the amalgamation of railways under one general "Council," so as to economise their expenditure and raise their dividends; limiting the maximum to 10 per cent. Looking, however, to what amalgamation of gas companies, even with limitation of maximum dividends to 10 per cent., has led, we would much rather incline to look favourably on the late (groundless) rumour that Government intend to take the whole system of railways into their hands, than trust to the tender mercies of such a monster monopoly. The present system is bad enough, as regards the public interests, but such a scheme, we fear, would make matters far worse than they are.

THE LEA VALLEY.—A conference, attended by magistrates and representatives of the local authorities of the wide-spreading districts surrounding the Lea Valley—an area almost equal to that of the metropolis itself—has been held at the Tottenham High-Cross-rooms, for the purpose of considering the important question of uniting the districts in one general system of drainage, similar to that of the scheme adopted in the metropolis. The question in some measure arises from the outbreak of cholera, which drew public attention to the foul state of the River Lea, that stream having changed from a river celebrated in song as "silvery" to little better than an open sewer, the extra-metropolitan north and north-eastern districts—those not taken in by the metropolitan main drainage scheme—freely draining into it. The Tottenham Local Board of Health have had an interim injunction obtained against it by the River Lea Trust, to prevent it draining further into the Lea. It was resolved to form a committee of the representatives of the districts, to give them power to consider the question in all its bearings, so as to be able to report upon and recommend some practical measure to a further meeting of the conference.

REPORT OF THE FRIENDLY OPERATIVE CARPENTERS' AND JOINERS' SOCIETY.—The thirty-ninth annual report of the Friendly Operative Carpenters' and Joiners' Society of Great Britain and Ireland, from August, 1865, to August, 1866, has been published at Manchester. The preface, by the general secretary, Mr. Robert Last, states that the union now numbers 140 lodges, comprising 9,400 members, being an increase for the year of 40 lodges and 2,504 members. A lodge has been opened in Belfast; and there is a prospect of an early extension of the union to Scotland. Five additional lodges have been opened in the British metropolis during the year, as also one in each of the thirty-five towns named in the report. The total expenditure of the society during the last twelve months has been 6,577*l.*, independent of large sums voluntarily distributed by the several lodges. Out of this sum 2,077*l.* have been expended on strikes; the principal items being,—Carlisle, 573*l.*; Preston, 1,073*l.*; Gloucester, 61*l.*; Dudley, 25*l.*; Leicester, 27*l.*; Keighley, 69*l.*; Barrow-in-Furness, 29*l.*; Birmingham, 38*l.*; Nottingham, 46*l.*; Derby, 14*l.*; Oldham, 12*l.*; Liverpool, 22*l.*; and Warrington, 19*l.*

A New Exchange for Middlesborough.—The foundation-stone of the new Exchange for Middlesborough has been laid by Mr. H. W. F. Bolckow, known in connexion with the Middlesborough and the Cleveland iron trade. The mayor and corporation met, and walked in procession to the site. There was a numerous gathering of gentlemen, merchants, and tradesmen. Mr. Adams, of Stockton, is the architect, and has designed the building in the Italian style. The contracts, which amount to 20,000*l.*, are let to Mr. Bellerby, of York. The cost of the whole of the building, including land, is estimated at about 30,000*l.*

Vendor and Purchaser.—In the case of *Mainwaring* v. *Cheese*, an estate had been sold by the plaintiff to the defendant, and the deed of conveyance had been duly executed, but as the purchase-money was not paid, the vendor's solicitor retained the deed, and the vendor remained in receipt of the rents. The deed contained the usual recital of the payment of the purchase-money, but did not contain any actual release in terms. Matters remained in this state until the action was brought to recover the amount of the purchase-money. On the part of defendant, it was contended that the deed containing an acknowledgment of the purchase-money being paid, was equivalent to a release, and that the deed at the same moment that it conveyed the estate, also released the legal right to sue for the purchase-money. The Court of Queen's Bench adopted this view, and gave judgment for the defendant.

Rateable Value of Towns in the West Riding.—The return of the rateable value of the Poor-law unions, as settled by the assessment committee in the lists last approved, has just been issued pursuant to an order of the House of Commons. From this document it appears that the rateable value of Barnsley is 204,133*l.*, which gives an increase of 2,193*l.* upon the rateable value on which the contribution was calculated at Lady-day, 1865. Bierley, North, value, 226,276*l.*; increase, 32,547*l.* Bradford, 405,757*l.*; increase, 35,362*l.* Bramley, 34,986*l.*; increase, 690*l.* Dewsbury, 289,479*l.*; increase, 14,998*l.* Doncaster, 222,717*l.*; increase, 1,855*l.* Ecclesall Bierlow, 182,193*l.*; increase, 45,190*l.* Goole, 93,401*l.*; increase, 979*l.* Halifax, 369,947*l.*; increase, 7,221*l.* Hemsworth, 51,143*l.*; decrease, 3,687*l.* Huddersfield, 367,006*l.*; increase, 7,346*l.* Keighley, 105,915*l.*; increase, 1,012*l.* Knaresborough, 100,652*l.*; decrease, 20,561*l.* Ouseburn, Great, 102,181*l.*; increase, 216*l.* Penistone, 49,392*l.*; increase, 1,323*l.* Ripon, 111,544*l.*; increase, 863*l.* Rotherham, 210,115*l.*; increase, 2,983*l.* Selby, 91,647*l.*; decrease, 1,194*l.* Sedbergh, 22,261*l.* Settle, 105,393*l.*; decrease, 30*l.* Sheffield, 379,999*l.*; increase, 9,689*l.* Tadcaster, 38,600*l.*; increase, 2,664*l.* Thorne, 96,918*l.*; increase, 203*l.* Wakefield, 208,893*l.*; increase, 494*l.* Wetherby, 47,121*l.*; decrease, 232*l.* Wharfedale, 61,516*l.*; increase, 1,940*l.*

The Yorkshire and Lancashire Reservoirs and the Great Flood.—The reservoirs, which form so important a feature in Yorkshire and Lancashire, says the *Bradford Observer*, have stood the test well; and the instances are rare where any amount of damage is apparent. There were fears for the Bilberry and Littleborough reservoirs, but they did not yield to the strain; the Halifax Ogden reservoir, which was regarded with suspicion, is not, it is said, injured; and the many reservoirs for the supply of Bradford and for compensation are nearly unscathed. At Grimwith the water ran in a fierce torrent between 20 in. and 3 ft. deep over and down the bye-wash, and some little damage has been done to the stonework at the lower end of the bye-wash, but it is nothing of consequence, and will soon be repaired. This is the only instance of injury to the Bradford reservoirs reported, and the fact is a testimonial as to the condition of the works and the skill of the borough surveyor. The general opinion is, that this flood ranks with the greatest of modern times. At Bradford the two great floods preceding it were in the summer of 1859, and just before Christmas, 1837. The latter was the greatest; but in both instances the water would be deeper than now. That, however, is accounted for by the new drainage, which probably saved the town from a terrible calamity, and also by the raising of the levels by paving operations. We learn from Keighley that the damage done by the bursting of the Lumb's Foot dam amounts to 1,000*l.* The water destroyed everything with which it came in contact.

"Parrock."—A correspondent writes,—I see a remark on the word "parrock," in the current *Builder*. In illustration I may note that till the South-Eastern Railway Company fixed the spelling, the wood beyond Tunbridge, where there is now a junction, was as often called *Parrock* as *Paddock* Wood. I suppose the former is the original form, and is a variety of *park*, which in Scotland still means an enclosed field, without reference to its planting.—We may add that our park is from *parruc*, Anglo-Saxon.

Strike against an Architect's Clerk of Works.—At the village of Yoxall, a few miles from Burton-on-Trent, the parish church has been under restoration, and the contractor, Mr. Ife, of Stourbridge, and his masons and carpenters, have struck work, and removed their scaffoldings and other materials, because the architect, Mr. Woodyer, of London, would not dismiss his clerk of works, Mr. Beckensall, against whom it is alleged that he did not object to the sufficiency of certain works till they were done. Mr. Beckensall alleges that he only did his duty, according to the specification, and that the work objected to was objectionable, or the material inferior to what it ought to have been. The Trustees and Committee, after inquiring into the matter, have exonerated the clerk of works; but four meetings of the Masters' Association and the Operative Masons' and Carpenters' Societies have also been held, and resolutions passed to cease work till Mr. Beckensall be removed from his office. Meantime, the church has been unroofed, and only partially re-roofed, and the parishioners have no other place of worship than a schoolroom 15 yards by 8 yards in dimensions.

Co-operative Societies in England.—According to an abstract in the *Reporter* of an official return for the past year, regarding the industrial and provident societies in England, the number registered under the Act 26th and 27th of Victoria, cap. 87, amounts to 651:—Lancaster shows a total of 139; York, 125; Middlesex, only 45; Durham, 36; Northampton 28; Staffordshire, 27; Chester, 23; Surrey, 22; Northumberland, 20; Norfolk, 16; Derby, 18; Kent, 14; and Warwick, 10. Of the 651 societies comprehended in the return, 417 have sent in the required statements, while 182 have neglected to do so, and 52 have been actually dissolved. Turning to the actual number of members enrolled in each county, at the 31st of December, 1865, we find Lancaster is highest on the list. It possessed no less than 46,963 members at that date. York is second, its numbers being 32,768. Middlesex is a long way behind, its total only amounting to 1,711 members. The next counties are,—Durham, 6,855; Northampton, 6,348; Northumberland, 4,000 exactly; Chester, 3,259; Derby, 2,749; Kent, 2,534; Gloucester, 2,366; Stafford, 1,777; and Monmouth, 1,101. All the other societies are below 1,000 in number. As to the total amount received or credited upon shares from the commencement of each society to December last,—Lancaster is here again first on the list, for it shows it has raised in its time an actual share capital of no less than 590,039*l.*; while York, the second in order, can boast of the very handsome sum of 328,005*l.* All the other societies fall immensely short of this, none of them reaching even to 40,000*l.*, Durham, the highest in the list, only reaching to 39,434*l.*, followed by Northumberland, 24,674*l.* The objects for which the societies are established are various:—Grocery, butchering, shoemaking, drapery, coals, flour, baking, &c., form the principal items in this department. These are, it is well known, the main objects of the co-operative movement. But we were not prepared to find that the movement had extended to Grosvenor-square, and that, in the immediate vicinity of that aristocratic neighbourhood, forty-five members had set up an establishment for "farriery." The profits appear, in the main, to be influenced by the number of the members, and the consequent amount of the business done. Thus we find in York that while some societies realise profits such as 12,541*l.*, 6,981*l.*, 4,682*l.*, others in the same county only attain to a modest 50*l.* But in each case there is a proportionate profit. In Lancaster, again, one society has realised no less a profit than 25,156*l.*; while there are other societies dividing as little as 19*l.* But the relative value applies in both cases. The mode of division of profits, of course, varies in the different societies, but the general rule is to set aside certain proportions for interest on paid-up shares, dividends to members, depreciation fund, reserve fund, &c.

Abuse of the Patent Law.—A somewhat curious case has occurred with reference to aniline dyes which seems to show the necessity for some change in the law. It had been decided, after much vexatious litigation, that a patent was worthless on account of certain words, which the proprietors therefore endeavoured to obtain permission to alter or disclaim. The application was refused, and the decision of the Lord Chancellor was confirmed on appeal to the House of Lords. Now that the prosecutor's chief counsel has himself become Solicitor-General, exactly the same application has been again made as had been refused by the late Solicitor-General after the judgment of the Lord Chancellor, and before the decision of the House of Lords. The application has been heard, but judgment is deferred. The case in question was that of Simpson, Maule, & Nicholson, manufacturing chemists, *versus* T. Holliday & Co., and the patent referred to was that of H. Medlock, dated 1860, which was sold for 150*l.*, and then re-sold to the plaintiffs for 2,000*l.* The defendants were backed by another patent, of previous date, for the use of the same materials,—arsenic acid and aniline,—for the production of colour.

Discovery of Ancient Dwellings.—Between Weaverthorpe and Helperthorpe, in the Wold valley of the East Riding, there are several low, irregularly-shaped mounds, in the grass fields adjoining the high road. During the visit of the archæologists to the Wolds, it was resolved to see if these mounds were places of sepulture. Mr. W. Lovell, of Helperthorpe, selected one of the largest. It was soon found that the mound was no sepulchre, but that it was composed of various stratifications of old floors and earthy accumulations. The section in the centre, at 4 ft. deep, showed the curved line of the original hollow, and above these portions of British pottery, bones of deer, ox, and swine, were found. At a higher level was another dark line, not hollowed, and above this large quantities of pottery of undoubted Roman make were found. Still higher, paved floors, as if of the hearth, showed signs of burning, and part of a large vessel, very like Anglo-Saxon ware, and an unmistakable Anglo-Saxon bead, were met with: nearer the present surface the glazed pottery of Mediæval times was found, with iron nails and other objects. The mound showed very clearly that it had been accumulated during the occupancy of successive peoples. A well-marked ancient trackway passes just to the north.

TENDERS

For alterations at the Black Horse Tavern, Kingsland-road. Mr. Wm. Nunn, architect:—

Terrey (accepted)	£750 0 0

For the erection of premises 79, Bishopsgate-street Within, for Messrs. Burdett & Sons. Messrs. Humphreys & Son, architects:—

Ashby & Horner	£1,940 0 0
Ashby & Sons	1,929 0 0
King & Sons	1,790 0 0
Brass	1,787 0 0

For building parsonage-house, Tremaine, Cardiganshire. Mr. Withers, architect:—

Jones, Thomas, & Jones	£1,390 0 0
Thomas & Davies	1,092 17 1
Morris & James	1,058 12 10
Davis & James	988 5 0

For restoring the Garrison Chapel, Portsmouth. Mr. Street, architect. Quantities supplied by Messrs. Rake & Banwell:—

Messrs. Langdon	£7,062 0 0
Backhurst	5,575 0 0
Messrs. Bramble	5,388 0 0
Burbidge	5,127 0 0
Lawrence	4,995 0 0
Rogers & Booth	4,632 0 6
Simms & Marten	4,226 0 0

For alteration of the Liverpool Co-operative Stores, and converting same into a music and lecture hall for Dr. Corry. Mr. George Hopkinson, architect. Quantities supplied by architect:—

Bentham	£896 0 0
Edwards	879 0 0
Greenwood	828 10 0

For farm buildings, water tower, &c., bailiff's and labourers' cottages, exclusive of well sinking, at Crouch, Wrotham, near Sevenoaks, Kent. Messrs. J. & E. Baddeley, architects:—

W. & J. Hyder (accepted)	£1,559 10 0
Norris	1,487 10 0

For reinstating No. 13, Albion-road, Holloway, N., for Mr. J. Pike. Mr. Rowland Plumbe, architect:—

Williams & Son	£897 0 0
Smith & Son	799 0 0
Glenn	693 0 0
Holton	691 0 0
Goodman	685 0 0

For public baths and wash-houses for the parish of St. Pancras. Messrs. Messenger & Gundry, architects:—

Manley & Rogers (accepted)	£13,526 0 0